EXAMINING FACTORS THAT INFLUENCE THE ADOPTION AND SUSTAINABILITY OF A TRAUMA-INFORMED UNIVERSAL MENTAL HEALTH INTERVENTION IN BALTIMORE CITY PUBLIC SCHOOLS

by
Kimberly T. Arnold, MPH

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ABSTRACT

Schools are a promising setting to facilitate the prevention of the harmful effects of trauma, especially for underserved youth who are disproportionately exposed to trauma. Limited research exists on the adoption and sustainability of preventive trauma-informed mental health interventions in schools. The objective of this dissertation was to examine factors that influenced the adoption and sustainability of Relax, be Aware, and Do a Personal Rating (RAP Club)—a trauma-informed universal mental health intervention in Baltimore City Public Schools.

Manuscripts 1 and 3 examined multi-level (i.e., individual-, school-, and macro-level) factors that influenced adoption and sustainability, respectively, of RAP Club within the context of a randomized controlled trial (RCT) using a descriptive qualitative multiple-case study design. The second manuscript used a quantitative cross-sectional design to investigate school-level factors associated with adoption of RAP Club within the context of the RCT.

Manuscript 1 found that individual-level factors that influenced adoption of RAP Club include professional characteristics and positive perceptions of/attitudes about the intervention. School-level factors that influenced adoption of RAP Club include administrative leadership, decision structure, lack of trauma-informed mental health programs within schools, and positive school culture and climate that aligned with intervention activities. Manuscript 2 found that having a collaborative decision structure between administration and staff was significantly associated with adoption (adjusted odds ratio=30.5; $p<0.05$; 95% CI=2.08-446). Macro-level factors that influenced adoption per findings in Manuscript 1 include inadequate district funding for preventive

school mental health programs and the benefits of engaging in an university-community partnership. Results from manuscript 3 found that multi-level barriers to sustainability include low self-efficacy of school staff, staffing issues, changes in administrative leadership, conflicts with school schedule and space, lack of funding, and lack of sufficient communication between schools and researchers regarding how to sustain programming.

Findings suggest that the adoption and sustainability of trauma-informed universal mental health interventions in schools are influenced by multi-level factors. Multi-level implementation strategies are needed to increase the adoption and sustainability of these interventions. Multisectoral collaborations are key to increasing the uptake and maintenance of school mental health interventions more broadly—especially in under-resourced urban schools.

Advisor: Keshia M. Pollack Porter, PhD, MPH

Readers:

Tamar Mendelson, PhD, MA (Chair)

Shannon Frattaroli, PhD, MPH

Rachel Durham, PhD, MA

Alternates:

Emma Beth McGinty, PhD, MS

Terrinieka Williams Powell, PhD, MA

PREFACE

Dedication

To Momma, Daddy, Tabitha, Sylenthia, Tiram, and Ethan,

words cannot express the impact that you have had on my life and academic journey.

Momma and Daddy,

your unconditional love, endless support, and persistent encouragement have been paramount to my success. Thank you for raising me to be a strong, humble woman.

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your life experiences contributed to my desire to become a prevention-focused healer and researcher. I think of you and miss you every day. Although you are physically gone, you will continue to live on through your children and the fond memories of the times we shared over the years.

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"Do not fear, for I am with you; do not be dismayed, for I am your God. I will strengthen you and help you; I will uphold you with my righteous right hand."
–Isaiah 41:10 (NIV)

"Little by little grow the bananas." –African Proverb

"Success is to be measured not so much by the position that one has reached in life as by the obstacles which she/he has overcome." – Booker T. Washington

First, I give honor and thanks to the Creator for bringing me into this world to fulfill my life's purpose of being a healer, leader, teacher, writer, and public servant. When I was a child, I always thought that I would become a physician, but You had bigger plans in store. You ordered my steps and brought me into the field of public health to *save lives millions at a time* (as our Bloomberg School of Public Health motto states). I would have never imagined that I would earn a PhD, but here I am.

I salute my ancestors upon whose shoulders I proudly stand. Thank you for paving the way for me and demonstrating the incredible strength of our people. During hard times when I questioned this process and wondered why I had to face so many obstacles and challenges, I had to step back and ask myself, "Why *not*?" Afterall, if a mountain were smooth, you would never be able to reach the top. I have faced immense challenges during this PhD journey, and have shed blood, sweat and tears while climbing to the top of this mountain. Each year, I faced at least one major personal challenge that could have resulted in me leaving the program. However, I persevered by the grace and strength of God and my ancestors.

To all of my family (adoptive, blended, biological, and surrogate) and friends, thank you for your support throughout this process. I couldn't have done it without you!! Thank you for being supportive and listening to me vent and complain. Now you don't

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ACEs:	Adverse Childhood Experiences
AOR:	Adjusted odds ratio
AY:	Academic year
BCPS:	Baltimore City Public Schools district; City Schools
CBT:	Cognitive behavioral therapy
CBITS:	Cognitive Behavioral Intervention for Trauma in Schools
CDC:	Centers for Disease Control and Prevention
CI:	Confidence interval
EBPs:	Evidence-based practices
ED:	United States Department of Education
EPIS:	Exploration, Adoption/Preparation, Implementation, Sustainment
ESSA:	Every Student Succeeds Act
FARMS:	Free and reduced meals
IEP:	Individualized Education Plan
LEP:	Limited English proficiency
NSCC:	National School Climate Council
PIEL:	Prevention and Intervention for Early Learners
PBIS:	Positive Behavioral Interventions and Supports
PTSD:	Post-traumatic stress disorder
RAP Club:	Relax, be Aware, and Do a Personal Rating Intervention
RCT:	Randomized controlled trial
SAMHSA:	Substance Abuse and Mental Health Services Administration
SD:	Standard deviation
SEAs:	State education agencies
SST:	Student Support Team
SPARCS:	Structured Psychotherapy for Adolescents Responding to Chronic Stress
U.S.:	United States

CHAPTER ONE: INTRODUCTION

Approximately 35 million children in the United States (U.S.) have experienced at least one adverse experience that could lead to psychological or physical trauma (Child and Adolescent Health Measurement Initiative, 2012). According to the Substance Abuse and Mental Health Services Administration (SAMHSA), "individual trauma results from an event, series of events, or set of circumstances experienced by an individual as physically or emotionally harmful or life-threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being" (SAMHSA, 2018). More than two thirds of children in the U.S. are impacted by at least one form of trauma by age 16 (SAMHSA, 2015). Potentially traumatic events include (but are not limited to) various forms of abuse, assault, and neglect; community and school violence; witnessing and/or experiencing domestic violence; or the sudden or violent loss of a loved one (SAMHSA, 2015).

In the U.S., Black and Hispanic children are exposed to more forms of trauma as compared to white children, and they are less likely to have access to mental health services to help cope with trauma (Larson et al., 2017; Slopen et al., 2016). Many children and adolescents of color in urban areas disproportionately experience "compounded community trauma," which is defined as "the experience of children when they witness violence in *both* their homes and their neighborhoods" (Alegria et al., 2010). Exposure to trauma is associated with negative academic (e.g., learning problems, lower grades, more expulsions and suspensions), health (e.g., increased probability of mental and behavioral disorders, increased risk for long-term chronic conditions), and social (e.g., increased involvement with the child welfare and juvenile justice systems, poorer

social functioning) outcomes during childhood and into adulthood (CDC, 2016; SAMSHA, 2015).

Schools are one setting being targeted to help prevent the harmful effects of trauma because they are the dominant source of mental health services and prevention programs for young children and adolescents; more than 27 million students in the U.S. and around the world have been served over the past decade (Cuellar, 2015; Murphy, 2017). While several effective mental health interventions have been developed and validated for preventing and treating common mental health problems—including those that are correlated with trauma such as the Cognitive Behavioral Intervention for Trauma in Schools (CBITS)—few of these evidenced-based practices (EBPs) have been successfully implemented or sustained in schools (Eiraldi, 2015). In addition to questions about implementation overall, the implementation of EBPs and promising mental health interventions in under-resourced schools (i.e., schools located in low-income school districts) has been understudied (Eiraldi, 2015).

Relax, be Aware, and do a Personal rating (RAP Club) is a trauma-informed universal school mental health intervention that was adapted from Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS), a trauma-focused group treatment for urban adolescents exposed to chronic stress and trauma (DeRosa, 2006). The "Improving Wellness and School Success in Urban Eighth Graders" study, is a randomized controlled trial (RCT) that seeks to evaluate the effect of RAP Club compared to a general health education program on academic outcomes among eighth graders in the Baltimore City Public Schools System (hereinafter referred to as "RAP Club RCT," "the RCT," or "RAP Club trial"). Mental health is being

assessed as proximal outcomes, including underlying processes (e.g., decision-making) and as intermediate outcomes (e.g., symptoms of internalizing and externalizing conditions). During cohort 1 of the trial (2016-2017) RAP Club was implemented in 6 schools; during cohort 2 (2017-2018) it was implemented in 7 schools; and during the most recent cohort 7 schools implemented the intervention (2018-2019). The reasons why these 20 schools decided to initially adopt the intervention (within the context of a RCT) are unclear. Moreover, RAP Club was not sustained in any of the schools from cohorts 1 and 2, which raises questions regarding how to sustain these interventions in schools.

The objective of this dissertation was to examine factors that influenced the adoption and sustainability of RAP Club, a trauma-informed universal mental health intervention, in the Baltimore City Public Schools district. Adoption is defined as, "the intention, initial decision, or action to try or employ an innovation or evidence-based practice…Adoption may also be referred to as 'uptake'" (Proctor et al., 2011). In the context of this study, adoption is defined as the initial decision or action to implement the RAP Club intervention as part of participation in a RCT. Sustainability is defined as, "the extent to which a newly implemented treatment is maintained or institutionalized within a service setting's ongoing, stable operations" (Proctor et al., 2011). This study defines sustainability as the extent to which RAP Club is maintained in schools that initially implemented the intervention as part of participation in a RCT. This study includes the use of a quantitative cross-sectional study and two qualitative multiple-case studies to achieve the study objective. Given the positive impact of school mental health interventions on academic achievement and mental health outcomes, especially for those exposed to trauma (Fazel, Hoagwood, Stephan, & Ford, 2014; Murphy, Abel, Hoover,

Jellinek, & Fazel, 2017; Suldo, Gormley, DuPaul, & Anderson-Butcher, 2014), this study fills an important gap in knowledge regarding adoption and sustainability of trauma-informed universal mental health interventions in schools. Findings are particularly salient for schools that are under-resourced, have a large population of students of color, and are located in urban environments where children are more likely to be exposed to forms of trauma such as community violence, crime, and concentrated poverty (Eiraldi, 2015). This research also generated strategies that could be included in the RAP Club RCT to increase the likelihood that the 7 schools that recently implemented the program (as part of cohort 3) and schools in future cohorts would sustain the intervention.

Background

Effects of childhood trauma

Although numerous existing studies have examined the negative effects of various forms of childhood adversity such as child abuse and neglect, the Adverse Childhood Experiences (ACEs) Study conducted by Felitti and colleagues in 1998 was the first one to examine the dose-response relationship between exposure to ACEs as a child—including emotional, physical, or sexual abuse, and household dysfunction (witnessing violence against mother, or living with household members who were ever imprisoned, mentally ill or suicidal, or substance users)—and the leading causes of morbidity and mortality in adults (Felitti, 1998). Categories of parental separation/divorce, emotional and physical neglect were added to later ACEs studies to make a total of 10 ACE categories (Dube et al., 2002; Dube et al., 2003). The first and subsequent ACEs studies (over 70 studies to date) have found a strong, graded dose-response relationship between the number of ACEs experienced by a child and negative health, social, and behavioral

outcomes in adulthood (Metzler et al., 2017). Individuals with 4 or more ACEs have been found to be at the highest risk for or have experienced adverse outcomes (Felitti and Anda, n.d.). Studies have demonstrated that ACEs are strongly related to the development of increased risk factors for disease throughout the life course including disrupted neurodevelopment; social, emotional and cognitive impairment; adoption of health risk behaviors; disease, disability, and social problems; and early death (CDC, 2016).

In recognition of the predominantly white, suburban, middle and upper-class populations in previous ACEs studies, Wade (2014) noted that a large percentage of people of color comprise low-income urban populations and that "urban economically distressed children" disproportionately experience ACEs in addition to other stressors such as poverty, community violence, discrimination, and peer victimization (Wade, 2014). Additional studies have demonstrated how high rates of isolation and socioeconomic disadvantage experienced by children of color can have significant adverse effects on mental health, including depression, anxiety disorders, and posttraumatic stress disorder (Alegria et al., 2010). Disparities in exposure to childhood trauma places urban youth of color at an increased risk of experiencing negative health (mental and physical) and socioeconomic outcomes.

Studies have demonstrated that "individuals with low education or low income are more likely to report ACEs and more likely to have ill health effects" (Ye & Reyes-Salvail, 2014), and that "early adversity can negatively impact adult education, employment, and income" (Metzler et al., 2017). Currie & Widom (2010) found that adults who reported histories of child abuse and neglect have been shown "to have lower

levels of education, lower employment earnings, and fewer assets compared to matched controls" (Metzler et al., 2017). Studies have also reported that adolescents exposed to violence are at increased risk of lower educational attainment, and lower income and employment as an adult as compared to adolescents who were not exposed to violence (Covey et al., 2013; Macmillan & Hagan, 2004; Metzler et al., 2017).

Mental health interventions in schools

The increased recognition of the effects of childhood trauma on mental health problems and the effects of mental health problems on academic achievement has led to an increased focus on the unique platform that schools can offer in providing access to trauma-informed and other types of mental health interventions (Fazel et al., 2014). According to SAMHSA (2018):

> *"A program, organization or system that is trauma-informed: 1) realizes the widespread impact of trauma and understands potential paths for recovery; 2) recognizes the signs and symptoms of trauma in clients, families, staff, and others involved with the system; 3) responds by fully integrating knowledge about trauma into policies, procedures, and practices; and 4) seeks to actively resist re-traumatization."*

The 6 principles of a trauma-informed approach are safety; trustworthiness and transparency; peer support; collaboration and mutuality; empowerment, voice and choice; and cultural, historical, and gender issues (SAMHSA, 2018).

Schools are an ideal location for the delivery of trauma-informed and other types of mental health services and interventions because "children spend more time in school than in any other formal institutional structure" (Fazel et al., 2014). While the delivery of public health education and programs in schools is not new (e.g., sex education, nutrition, physical education), Fazel and colleagues (2014) noted that the "provision of mental

health services in schools is quite new [compared to other school-based health programs] and mainly addresses the academic effect of mental health difficulties that are not being met by external mental health services." Depending on available resources, mental health problems can be prevented, identified, and treated in schools because schools often have a combination of formal and informal mental health providers, including psychiatrists, psychologists, social workers, guidance counselors (e.g., academic and non-academic counseling such as helping students deal with grief/loss and self-esteem issues), and teachers (e.g., informal counseling and identifying potential signs of mental and behavioral disorders).

School mental health interventions fall into three categories – universal, selective, and indicated – that are analogous to primary, secondary, and tertiary public health interventions, respectively. Universal interventions include strategies that can be offered to an entire population, based on the evidence that it is likely to provide some benefit to all and reduce the possibility of disorder (Gordon Jr, 1983; O'Connell, Boat, & Warner, 2009). Universal mental health programs are most common in schools and often focus on constructs such as "social and emotional skills, positive behaviors, social inclusion, effective problem solving, and good citizenry" (Fazel et al., 2014). Researchers have posited that universal programs have the greatest chance of adoption because they are the least intrusive and cost the least compared to selective and indicated interventions (Fazel et al., 2014; Murphy et al., 2017). However, they can be difficult to implement since universal programs are supposed to be delivered to all students. Selective interventions employ strategies for subpopulations identified as being at elevated risk for a mental or behavioral disorder. For example, some interventions are designed for students at high

risk of dropping out, drug misuse, and/or aggressive behaviors (Fazel et al., 2014). Strong evidence exists for selective school-based prevention and early intervention programs addressing behavioral difficulties, and students with anxiety or depressive disorders (Fazel et al., 2014). Indicated interventions include strategies that are designed for individuals "who are identified (or individually screened) as having an increased vulnerability for a disorder based on some individual assessment but who are currently asymptomatic"(Gordon Jr, 1983; O'Connell et al., 2009). Multitiered systems of support, such as Positive Behavioral Interventions and Supports (PBIS; Murphy, 2017), provide interventions across all these levels. Despite the increasing number of studies demonstrating the effectiveness of various school mental health interventions—such as PBIS, CBITS, and the Good Behavior Game (Fazel, 2014; Murphy, 2017)—many gaps in knowledge remain about the adoption and sustainability of school mental health interventions, especially those that are trauma-informed.

Implementation science in school mental health

Implementation science is defined as "the scientific study of methods to promote the systematic uptake of research findings and other EBPs into routine practice, and, hence, to improve the quality and effectiveness of health services" (Bauer, Damschroder, Hagedorn, Smith, & Kilbourne, 2015; Eccles & Mittman, 2006). Implementation science also produces knowledge about effective strategies for supporting the adoption and sustainment of interventions (Lyon, A.R., n.d.). Implementation science models and concepts have been applied to and studied in school mental health (Owens et al., 2014). Two examples of these models are the "Conceptual model of global factors affecting

implementation in public service sectors" by Aarons and colleagues (2011) and the "Dynamic sustainability framework" by Chambers and colleagues (2013).

Aarons and colleagues (2011) developed and applied a multi-level, four phase model of the implementation process (i.e., Exploration, Adoption/Preparation, Implementation, Sustainment (EPIS)) to public sector services. The EPIS model was one of the first to consider the phases of implementation as well as characteristics of the outer and inner contexts of public service systems. Aarons and colleagues (2011) concluded that a better understanding of the challenges likely to be present during the various phases of implementation could help stakeholders navigate the complex process of implementation more effectively. The "Dynamic sustainability framework" by Chambers and colleagues (2013) was subsequently developed and built upon the theoretical model developed by Aarons and colleagues (2011) to highlight the importance of adaptation throughout the phases of implementation to support continued sustainment of interventions.

Past research on adoption has been mostly theoretical (Wisdom et al., 2014). From a practical standpoint, however, Wisdom and colleagues (2014) postulated that, "empirical data can most effectively illuminate next steps for practitioners, researchers, and policymakers." Existing empirical studies of adoption have used either quantitative (Cohen & Levinthal, 1990; Damanpour & Schneider, 2006; Valente, 1996) or qualitative approaches (Gallivan, 2001; Vona et al., 2018). One rigorous study used mixed methods to test a theory of adoption within the context of implementation, but it was focused on the adoption of medical innovations in hospitals (Meyer & Goes, 1988; Vona et al., 2018).

Implementation research on school mental health interventions is largely focused on fidelity (Domitrovich, 2008; Owens et al., 2014; Eiraldi et al., 2015). Very few studies have examined factors that influence the adoption and sustainability of school mental health interventions (Aarons et al., 2011; Wisdom et al., 2014; Nadeem and Ringle, 2016). There are a few studies that focus on the implementation and sustainability of CBITS (Vona et al., 2018; Nadeem and Ringle, 2016), but CBITS is a predominantly treatment-focused intervention for students that show symptoms for post-traumatic stress disorder (PTSD). No studies to date have studied factors that influence the adoption and sustainability of a trauma-informed universal school mental health intervention.

Conceptual framework

The conceptual model developed for this dissertation (Figure 1) is an adaptation of "Factors that Can Affect Implementation Quality: A Multi-Level Model" by Domitrovich and colleagues (2008) and includes implementation terms from the taxonomy of implementation outcomes created by Proctor and colleagues (2011). The model depicts various factors at the individual-, school-, and macro-levels that can impact implementation of school-based prevention programs, including preventive school mental health interventions. Included in the model in green are the various stages of implementation situated within the concentric circles to illustrate the multiple levels of influence of contextual factors on adoption during the pre-implementation phase and sustainability during the post-implementation phase.

Individual-level factors are those that influence individuals (e.g., principals, social workers, teachers) who are involved in adopting, delivering, and/or sustaining preventive

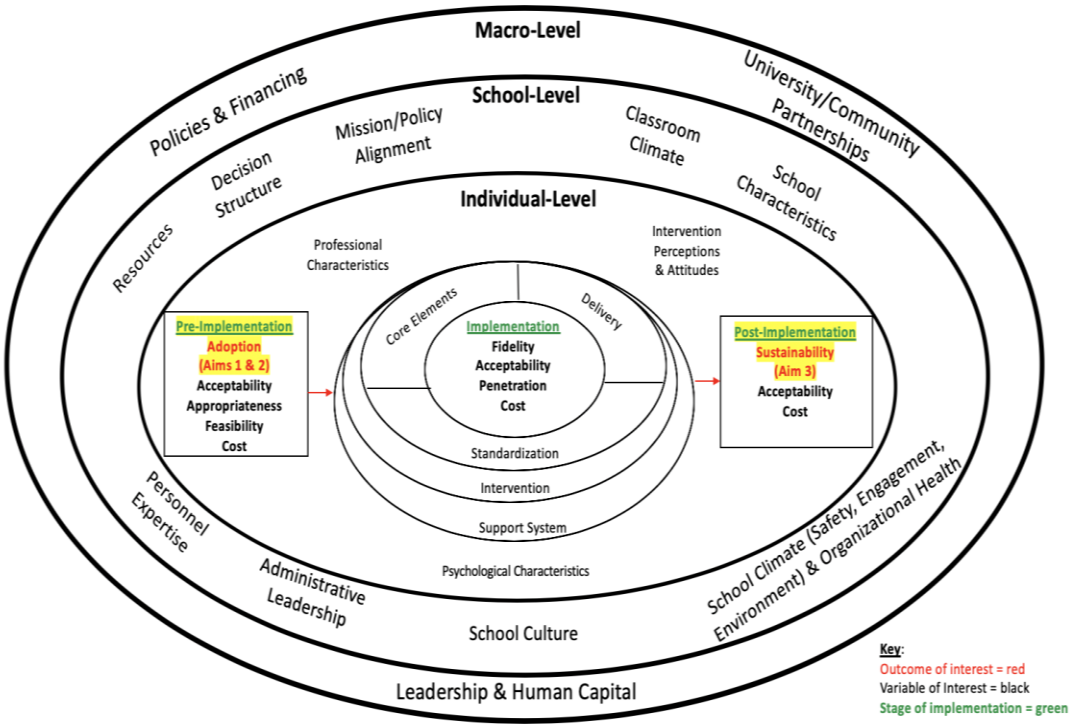
school mental health interventions (Domitrovich et al., 2008). Relevant individual-level factors include professional characteristics (e.g., education, training, skills); psychological characteristics (e.g., enthusiasm, confidence to adopt/implement/sustain intervention, self-efficacy, professional burnout); and intervention perceptions and attitudes (e.g., acceptance and understanding of the intervention).

The next layer of the model is school-level factors, which recognizes the school as an organizational entity that can influence adoption, implementation, and sustainability of preventive school mental health interventions (Domitrovich et al., 2008). The school-level factors depicted in the model include: resources (e.g., resources available to deliver preventive interventions in schools including supplies, materials, funding); decision structure and administrative leadership; mission/policy alignment (i.e., link between mental health intervention and academic achievement); school and classroom climate; school culture; personnel expertise; and other school characteristics (e.g., absenteeism among students, school size, schools with high number of at-risk students).

At the outermost layer of the model are broad macro-level factors that could impact the adoption, implementation, and sustainability of preventive school mental health interventions (Domitrovich et al., 2008). The macro-level factors depicted in the model include policies and financing (e.g., federal, state, and district policies); university-community partnerships (e.g., collaboration between universities and schools to implement and evaluate school mental health interventions); and leadership and human capital (e.g., community capacity and empowerment, qualified professionals or individuals from the community that could be trained to help deliver a school mental health intervention).

The focus of my dissertation research is highlighted in red in the model. During the pre-implementation phase, I sought to understand the individual-, school-, and macro-level factors associated with adoption of RAP Club (Aims 1 and 2). During the post-implementation phase, I sought to understand which individual-, school-, and macro-level factors impacted sustainability of RAP Club (Aim 3). While there are variables illustrated in this model that were not measured, displaying them informed my thinking about how my outcomes could be influenced by a wide variety of individual, contextual and implementation-related factors.

Figure 1: Multi-level model of factors that can affect implementation quality adapted to study factors that influence adoption and sustainability of a trauma-informed universal mental health intervention



Study aims

The overall objective of this dissertation was to examine factors that influenced the adoption and sustainability of RAP Club, a trauma-informed universal mental health intervention, in the Baltimore City Public Schools district. The Specific Aims were:

Aim 1: To determine the multi-level factors that influenced administrators of schools in Baltimore City to adopt RAP Club as part of participating in a RCT.

Aim 2: To determine which school-level factors were associated with the adoption of RAP Club as part of participating in a RCT.

Aim 3: To determine the individual-, school-, and macro-level factors that impacted the sustainability of RAP Club after implementation in a RCT.

Dissertation organization

My dissertation research uses the three-manuscript option and is organized into six chapters. Following this chapter, an overview of the methods used for the three manuscripts will be presented in Chapter Two followed by the three manuscripts (Chapters Three – Five), a discussion of findings and implications of the three manuscripts (Chapter 6), and a conclusion. The first manuscript examines the multi-level (i.e., individual-, school-, and macro-level) factors that influenced adoption of RAP Club using a descriptive qualitative multiple-case study design (Aim 1). The second manuscript investigates the school-level factors associated with adoption of RAP Club using a quantitative cross-sectional design (Aim 2). The third manuscript explores individual-, school-, and macro-level factors that influenced sustainability of RAP Club using a descriptive qualitative multiple-case study design (Aim 3).

CHAPTER TWO: METHODS

This chapter begins with an overview of the dissertation research context, the RAP Club intervention and RCT (including my role in intervention delivery), followed by an overview of the methods for each of the three manuscripts. Manuscripts 1 and 3 both used a descriptive qualitative multiple-case study design; thus, their methods will be discussed together. Manuscript 2 used a quantitative cross-sectional design and will be discussed separately.

Context

Research for this dissertation was conducted in the Baltimore City Public Schools (BCPS) district in Baltimore City, Maryland, which is located in the mid-Atlantic region of the U.S. The BCPS district serves approximately 80,000 students of whom 80% are African American, 11% are Hispanic/Latinx, and 8% are White. The district is in a city with high homicide and poverty rates (U.S. Census, 2017; Madhani, 2018). The demographic characteristics of students in the 20 schools that adopted RAP Club are similar to the district as a whole.

Human Subjects Approval

I was approved to conduct the qualitative and quantitative components of this dissertation by the Johns Hopkins School of Public Health Institutional Review Board. I was added to the RAP Club RCT by the RAP Club RCT Principal Investigator (Dr. Tamar Mendelson) as a Student Investigator, which gave me approval from the Johns Hopkins School of Public Health Institutional Review Board to interview participants for Aims 1 and 3 of my study and to have access to intervention materials for Aim 3. The overall RAP Club RCT was approved by the Johns Hopkins School of Public Health

Institutional Review Board and BCPS. Analysis of BCPS administrative data for Aim 2 was deemed "not human subjects research" since the study involved secondary analyses of existing, publicly available de-identified data sets.

The Relax, be Aware, and Do a Personal Rating Intervention

Relax, be Aware, and Do a Personal Rating (RAP Club) is a trauma-informed universal school mental health intervention that was adapted from Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS; DeRosa et al., 2006). SPARCS is a trauma-focused group treatment for adolescents living in low-income urban areas who have been exposed to chronic stress and trauma. SPARCS uses psychoeducation, cognitive behavioral therapy (CBT), and mindfulness strategies to promote self-regulation and resiliency. SPARCS is a model intervention that has been one of the top three interventions disseminated via the National Child Traumatic Stress Network. SPARCS was also included in a SAMHSA report on "Models for Developing Trauma-Informed Behavioral Health Systems and Trauma-Specific Services" and is included in the Evidence-based Practice Center Systematic Review Protocol compiled by the Department of Health and Human Services.

RAP Club Intervention Components

While SPARCS is focused on *treatment* for stress and trauma among adolescents, RAP Club was adapted over a 3-year period into a trauma-informed universal *prevention* program for upper middle school students in low-income urban settings. RAP Club was designed to be delivered to all 8th graders without screening individual students for trauma exposure or mental health issues. The core RAP Club intervention components include emotion regulation skills (taught via mindfulness strategies), problem solving and

communication skills (taught using CBT techniques), and psychoeducation about the effects of stress and trauma on the mind and body. Mindfulness, CBT, and psychoeducation are all evidence-based strategies for enriching mental health (Shepardson, Funderburk, & Weisberg, 2016). Findings from pilot research suggest that participation in RAP Club is correlated with improved academic and social competence, emotion regulation, discipline and classroom behavior when compared with regular school programming (Mendelson et al., 2015). Additional details of the RAP Club intervention are described in previously published research (Mendelson et al., 2015).

RAP Club RCT

Co-education schools in the BCPS district with an 8th grade (n=92) were approached by the RAP Club RCT Senior Research Program Coordinator to participate in the trial starting in May 2016. Recruitment efforts included emails, phone calls, and in-person meetings with principals with the goal of enrolling 8 schools per year in the study. Once schools enrolled, families of incoming 8th graders were provided with information about the study and IRB-approved parent permission forms. Up to 40 students who submitted IRB-approved parental consent and youth assent forms from each school were enrolled in the study and were randomized within their school to participate in RAP Club or in Healthy Topics, a general health education program/active control condition delivered by the study team.

RAP Club consisted of twelve 45-minute group sessions delivered twice a week. Depending on the availability of school space and time in the school schedule, the intervention was delivered on two consecutive days during the week, or on two separate days (e.g., Monday and Wednesday, Tuesday and Thursday, or Wednesday and Friday).

RAP Club groups were facilitated by a mental health clinician provided by the Rap Club RCT research team and a community member recruited from the Baltimore City Youth Opportunity Center, local colleges and universities, and the Johns Hopkins University Urban Health Institute listserv. A school-based mental health professional, teacher, or other staff member that was trained to deliver RAP Club and worked at participating schools helped co-facilitate the intervention sessions and was responsible for participating in weekly supervision calls about the delivery of the intervention during the RCT. The weekly supervision calls were led by Dr. Mendelson and/or Senior Research Program Coordinator. During the calls, group leaders and school staff were asked to discuss implementation of the intervention including student attendance and engagement, teacher presence in the room during intervention delivery, and the most successful and challenging aspects of the most recent intervention session.

RAP Club Training

The RAP Club training for school staff and community members is delivered by two SPARCS developers over the course of two days each year of the RCT in late summer before the school year of implementation begins. The training includes lectures, interactive activities, brainstorming sessions, and modeling of intervention delivery. School mental health personnel trained to deliver RAP Club receive PowerPoint slides of the training PowerPoint presentations and a RAP Club facilitator manual, which includes the RAP Club intervention curriculum and a copy of the RAP Club student manual. Participating school staff members are compensated for their participation in the study (e.g., attending training, intervention sessions, supervision calls, etc.).

Schools have the option to sustain RAP Club upon completion of participation in the RCT. To facilitate sustainability, schools that participate in the study have the option to send mental health personnel, teachers, or other school staff to RAP Club training free of charge in subsequent years of the RCT as a refresher or to expand the number of trained personnel. Participating schools are also offered consultation from the RAP Club research team if they choose to continue the intervention.

My Role in Intervention Delivery

In August 2018, I participated in the 2-day RAP Club training for cohort 3 schools. I was assigned to be a young adult mentor at 2 schools. For 6 weeks, I helped co-facilitate RAP Club with a mental health clinician provided by the research team. One of our groups had 10 students and our other group had 19 students. During the implementation phase, I prepared for and co-led group sessions, assisted with the completion of fidelity logs, and participated in weekly supervision calls. Being trained how to deliver RAP Club and assisting with implementation of the intervention helped me gain a deeper understanding of factors that could impact adoption, implementation, and sustainability of RAP Club. My experience enhanced my dissertation research by giving me a deeper understanding of RAP Club and the challenges faced by researchers and implementers when engaged in a university-community partnership to promote mental health in schools.

Aims 1 and 3: Descriptive Qualitative Multiple-Case Study Design

Study Design

A descriptive qualitative multiple-case study design (Yin, 2003) was used to determine the individual-, school-, and macro-level factors that influenced the adoption

(Aim 1; manuscript 1) and sustainability (Aim 3; manuscript 3) of the RAP Club intervention in the Baltimore City Public Schools district. Merriam's case study approach from a constructivist epistemology (Merriam, 1998) was used for Aims 1 and 3. Merriam's approach combines elements of Yin's well-structured case study design approach with Stake's more flexible approach (Yazan, 2015). Merriam (1998) defined qualitative case study as, "an intensive, holistic description and analysis of a bounded phenomenon [case] such as a program, institution, a person, a process, or a social unit" (p. xii; cited in Yazan, 2015).

The cases (units of analysis) that were studied in Aims 1 and 3 are the schools that adopted and implemented the RAP Club intervention as part of participation in a RCT. I used a multiple-case study design, which allowed me to analyze factors that influenced adoption and sustainability of the program within and across schools, and "to understand the similarities and differences between the cases" (Baxter & Jack, 2008).

Data Sources and Recruitment

The multiple-case study for Aim 1 used a single source method (Center for Innovation Research and Teaching, n.d.) by collecting data from semi-structured interviews with administrators (i.e., principals, interim principal, and vice principal) of Baltimore City public schools that adopted and implemented the RAP Club intervention during the first 3 cohorts of the RAP Club RCT (n=20 schools). The multiple-case study for Aim 3 used a multiple source method (Center for Innovation Research and Teaching, n.d.) by collecting data from semi-structured interviews with administrators and school staff (including mental health personnel and teachers) and reviewing intervention documents (i.e., written comments on RAP Club instructor fidelity rating forms and

supervision/technical assistance call notes) from participating schools that adopted and implemented RAP Club during the first 2 cohorts of the RAP Club RCT (n=13 schools). A purposive sampling technique (Patton, 2002) was used to gain information from key informants (i.e., administrators and school staff) because they were most knowledgeable about RAP Club's adoption and sustainability. Staff members were not interviewed about adoption because administrators were the primary decision-makers for adoption.

Interviews with principals (n=5) and school staff that were trained to deliver the RAP Club intervention (n=7) at the 6 schools that implemented RAP Club during cohort 1 of the RCT had already been conducted by the study's research team before I began conducting my dissertation research. The remaining principal from a school in cohort 1 was not contacted again for an interview due to potential recall bias since almost 2 years had passed since initial adoption of the intervention in that school. I attempted to recruit the remaining 14 principals and 7 staff members that had not yet been contacted for an interview. Contact information for eligible principals and staff were obtained from the Senior Research Program Coordinator of the RAP Club RCT. Potential participants were contacted via email, phone, and in-person school visits to schedule an interview. When I was unable to reach the principal, I attempted to contact the vice principal or another administrator who might have also been aware of decisions regarding adoption and sustainability, based on recommendations by the RAP Club RCT Senior Research Program Coordinator.

Recruitment ended once I exhausted all efforts to recruit the aforementioned participants via phone, in-person visit to their school, and/or email (minimum of 3 emails). All recruitment efforts were tracked and documented in Excel. Appendix A

displays characteristics of eligible principals and staff that did not participate in my dissertation research. Of the 6 principals that were eligible but did not participate, 2 principals did not respond to any of my recruitment attempts; 2 had scheduling conflicts due to lack of time on their schedule; 1 was hard to reach; and 1 declined a formal interview but sent email responses to questions about adoption and sustainability. Of the 3 staff members that were eligible but did not participate in this research study, 2 did not respond to any of my recruitment attempts and 1 had scheduling conflicts.

Instruments

Semi-structured interview guides for principals and staff members were initially developed by Dr. Mendelson and RAP Club RCT co-investigators. When I started my dissertation research, I expanded the guide for principals to gain a deeper insight into factors that could have influenced the adoption and sustainability of RAP Club. Questions were added to investigate the factors that influenced adoption and sustainability of RAP Club based on the individual-, school-, and macro-level domains present in the conceptual model that guided this research.

I created two versions of the expanded guide for principals—one guide was for principals that had already implemented RAP Club (i.e., cohort 2 principals); the other guide was for principals that had adopted RAP Club but had not yet finished implementing the program (i.e., most cohort 3 principals). Due to scheduling conflicts, one principal from cohort 3 was interviewed after RAP Club was delivered at her school. The staff guide was slightly modified to include a few probes to learn more about the role and level of engagement of the staff members in program delivery. Interview guides were finalized with input from Dr. Mendelson, Dr. Kristin Mmari (RAP Club RCT Co-

Investigator), Dr. Laura Clary (RAP Club RCT Field Director), and my thesis committee members. The original interview guide that was used for the interviews with cohort 1 principals, expanded interview guides for principals in cohorts 2 and 3, and the staff interview guide can be found in Appendix C.

Procedures

Key informant interviews lasted an average of 30-45 minutes and were audio recorded after oral consent was provided by the interviewee. Interviews took place in the office of the participant or other private location with a door that could be closed during the interview to maintain privacy. While I strived to conduct all interviews in person, telephone interviews were conducted when preferred by the participant n=10. All participants were offered a $15 gift card for participating in the study.

Before conducting the document review for Aim 3, I had meetings with Dr. Mendelson and the RAP Club RCT Senior Research Coordinator to determine which intervention documents were most relevant to my research questions, and to obtain access to these documents for analysis. We decided that it would be best to review the intervention fidelity logs and supervision call notes since these documents provided information about school-level factors that could potentially influence sustainability (e.g., space, scheduling conflicts; see Appendix D). Fidelity logs were completed after each intervention session by RAP Club group co-facilitators (i.e., mental health clinicians from the research team and community members). Following a series of quantitative ratings regarding curriculum coverage, the logs posed three qualitative questions asking group leaders to describe the most successful part of each session, the most challenging part of each session, and topics that would be helpful to discuss in supervision. The qualitative

questions were reviewed for Aim 3 (manuscript 3) because they were most relevant to sustainability.

Group co-facilitators from the research team and school staff members-in-training participated in supervision calls led by Dr. Mendelson and/or the RAP Club Senior Research Program Coordinator. During the supervision calls, group leaders and school staff were asked to discuss student attendance and engagement, teacher presence in the room during intervention delivery, and the most successful and challenging aspects of the most recent intervention session. The supervisor(s) leading the calls took notes to document the key content of the calls.

Data Analysis

Qualitative data were analyzed using Yin's 5 phases of qualitative data analysis (Yin, 2011). The iterative phases include: 1) compiling the data; 2) disassembling the data; 3) reassembling the data; 4) interpreting the data; and 5) making conclusions (Yin, 2011). During the compiling phase, interview transcripts and intervention documents were uploaded to Atlas.ti, a qualitative data management software program (Hwang, 2008). During the disassembling phase, I developed preliminary codes, using an inductive approach, from the interview guides and after reading the first 5 interview transcripts. I worked with Dr. Mmari to refine the list of initial codes, which are considered to be Level 1 codes or open codes (Yin, 2011). While applying Level 1 codes to the interview transcripts, I began to notice how the codes related to each other and potential categories within which the Level 1 codes could fall (Yin, 2011) based on the conceptual framework that guided this research. After determining the categories within which the Level 1 codes fell, I developed and applied Level 2 (i.e., category codes) to the

data. As additional interviews were conducted and analyzed, the codebook was updated with new codes as needed.

During the reassembling the data phase, category codes were compared across data from interview transcripts and intervention documents (Bowen, 2009). Matrices—two-dimensional arrays of rows and columns (Yin, 2011)—were created based on category codes that were relevant to the research objectives (i.e., adoption, sustainability). Matrices for adoption were conceptually ordered (i.e., arranged by category codes) with each column representing the perspectives of administrators from each school. The rows of matrices for sustainability were role-ordered (e.g., according to administrator or staff role) and each column represented a different school to compare different perspectives within and across schools (Miles, Huberman, Huberman, & Huberman, 1994; Yin, 2011). Throughout the iterative disassembling, reassembling, and interpretation phases, the constant comparative method was used to identify patterns and discover theoretical properties in the data (Bowen, 2009; Glaser & Strauss, 1967; Malterud, 2001; Merriam, 1998). Similarities, differences, and general patterns were identified across schools and data sources (i.e., interviews and intervention documents for Aim 3). Themes that emerged from the data were categorized based on the conceptual framework that underpins this research (Domitrovich et al., 2008). Debriefing between authors on the manuscripts were used to enhance the trustworthiness of the data and findings (Baxter & Jack, 2008; Creswell, 2007; Denzin, 1989; Merriam, 1998).

Aim 2: Quantitative Cross-sectional Study Design

The primary research objective for Aim 2 was to determine the school-level factors associated with adoption of the RAP Club intervention. This objective was

achieved by secondary data analysis of the BCPS School Survey, which is a cross-sectional survey collected once a year from staff, parents, and students in all public and charter schools in the BCPS district (BCPS School Survey Items Dictionary, 2014) and administrative data for BCPS including attendance, discipline, and students eligible for special services (e.g., free and reduced meals (FARMS), special education, limited English proficiency (LEP)). All quantitative data were obtained for the 2015-2016 school year, which is the academic year before any schools implemented RAP Club. Recruitment and enrollment for the RAP Club RCT began in May 2016.

Because staff perspectives are most relevant to the decision-making processes involved in the adoption of trauma-informed mental health interventions, only staff responses were examined in the analysis of the BCPS School Survey data. Staff surveys are administered online each spring, and each staff member at every public school in the district receives a survey (overall staff response rate = 72%). Only staff surveys from schools with an 8th grade that were eligible to be approached by the RAP Club RCT research team (n=92 schools) were included in the analysis (staff response rate = 71%). Staff responses from each school were available for analysis (i.e., no missing data).

All questions in the publicly accessible School Survey were closed-ended. Survey questions were measured using a Likert scale (strongly disagree, disagree, agree, and strongly agree). The BCPS district collapsed responses into two categories—agree (includes agree and strongly agree) and disagree (includes disagree and strongly disagree)—and calculated an average percentage of staff responses of agreement for each survey question per school in the district.

Administrative data were obtained from publicly available local and state education databases. Chronic absences (i.e., number of students that missed more than 20 days of school in a school year), enrollment data (i.e., total number of students enrolled in each school during the 2015-2016 school year), and students eligible for special services (i.e., FARMS, special education, LEP) were obtained from the Maryland State Department of Education's "Maryland Report Card" website (Maryland State Department of Education, 2017). Discipline data (number of suspensions and expulsions) were obtained from the Maryland Public Schools website (Maryland State Department of Education, 2016). The rationale for including attendance, discipline, and enrollment variables is because these are included in the "school characteristics" category that is depicted in the conceptual framework that guides this research. According to the authors of the conceptual framework (Domitrovich et al., 2008), school characteristics such as school size (i.e., enrollment size), high student absenteeism (i.e., chronic absences), and schools with a large number of student discipline problems (i.e., a high number of suspensions and expulsions) could influence the implementation of school-based prevention interventions, including preventive school mental health interventions. The other variables provided information about additional school characteristics that could potentially influence adoption. School roster data (which contains grade configurations for each school) was obtained from the former BCPS website. All quantitative data were downloaded during the fall of 2018.

Quantitative Measures

Dependent Variable

The dependent variable was adoption of the RAP Club intervention – measured as a "yes/no" binary outcome (0 = did not adopt RAP Club as part of participation in a RCT; 1 = adopted RAP Club as part of participation in a RCT).

Independent Variables

The school district aggregated School Survey questions into dimensions and calculated an average positive satisfaction score for each dimension per school (i.e., proportion of staff with positive satisfaction scores). The ten original dimensions for the staff survey were administration, creativity and the arts, physical environment, learning climate, finding meaning in work, family involvement, school resources, safety, satisfaction with school, and teachers. Existing theoretical and conceptual frameworks in implementation science (i.e., theory of the adoption of innovations process; Wisdom et al., 2014), public health (i.e., the multi-level conceptual framework of factors that can influence implementation of school-based preventive interventions; Domitrovich et al. 2008), and education (i.e., review of school climate research; Thapa et al., 2013) guided the creation of new scales of school-level variables that could be associated with the adoption of RAP Club using individual School Survey questions. Cronbach's alpha was used to measure the internal consistency (i.e., reliability) of the new scales (Cronbach, 1951; Tavakol & Dennick, 2011). The alpha values for the new scales ranged from 0.67 (physical environment scale) to 0.94 (administration-communication scale). Alpha values between 0.70 to 0.95 are considered to be acceptable (Tavakol & Dennick, 2011). While the alpha value for the physical environment scale is slightly below 0.70, it is considered to be a reasonable alpha value based on existing literature (Taber, 2018).

Overall, the alpha values for the new scales indicate that the items within each scale adequately measure the same concept or construct.

The 11 new scales that were created are as follows: administration-collaborative decision-making structure (5 items; α=0.91); administration-communication (5 items; α=0.94); physical environment (5 items; α=0.67); resources and supplies (7 items; α=0.87); staff engagement (6 items; α=0.79); student engagement (5 items; α=0.76); family engagement (5 items; α=0.87); emotional safety (3 items; α=0.93); physical safety (6 items; α=0.90); safety-rules and norms (4 items; α=0.89); and teaching and learning (11 items; α=0.83). Specific survey questions within each scale can be found in Appendix B. Other independent variables included enrollment size, students eligible for FARMS, special education students, students with LEP, chronic absences, and discipline (students suspended or expelled). These additional independent variables were selected based on existing theoretical frameworks relevant to adoption and preventive interventions in schools (Wisdom et al., 2014; Domitrovich et al., 2008).

Since a linear relationship between the continuous independent variables and the logit transformation of the dependent variable did not exist, I created categories based on the median for each of the continuous predictor variables. All independent variables were coded as "0" or "1" based on the median percentage (more information in the exploratory data analysis section).

Data Analysis

Data cleaning and management: Before analyzing the data, a master dataset was created in Stata 14 that included all the independent variables listed in Appendix B. A total of 6 datasets were used: BCPS School Survey, attendance (chronic absences),

discipline (suspensions and expulsions), enrollment, special services (FARMS, special education students, and students with LEP), and school roster (grades served per school). All the datasets were initially Excel files. I transferred the files from Excel to Stata using StatTransfer and used the "School_Number" variable to deterministically merge the datasets. When the variable name did not match (e.g., SchoolNumber instead of School_Number), I changed the variable name for correct data linkage.

Within each dataset, I removed variables that were irrelevant to the analysis (e.g., principal's name, school address, etc.) and only retained those that were theoretically/conceptually relevant to the research objectives. Next, I merged the attendance, discipline, and special services files with the enrollment file and calculated percentages of the following: chronic absences (students that have missed more than 20 days of school); total suspensions and expulsions (discipline); FARMS; students with LEP; and special education students. Next, I merged the school roster file with the enrollment file. I created an "adopt" variable to indicate schools that adopted RAP Club (coded as 1) or did not adopt RAP Club (coded as 0). I combined enrollment, attendance, discipline, FARMS, LEP, and special education data for one school that had data split for elementary and middle school grades. I completed all of these various merges using the 'School_Number" variable. Then I merged the file that contained enrollment, attendance, discipline, FARMS, LEP, and special education data with the file that contained data from the School Survey.

After all datasets were merged, a total of 185 schools were in the master dataset. I removed all schools that did not have an 8^{th} grade (n=84) since they would not have been eligible to adopt RAP Club; 101 schools were left in the dataset. The following seven

schools that would not have been eligible to participate in the RAP Club RCT were also deleted from the dataset: three alternative schools, three schools for students with disabilities, and a school for girls only. Two additional schools were deleted from the dataset due to not having School Survey data because of low response count (school district labeled the data for these schools as "suppressed" because they had a response rate of less than 30%). Of these two schools that were deleted, one had fewer than 30 8th grade students and would not have been eligible to participate in RAP Club RCT. A total of 92 schools remained in the dataset for analysis.

Exploratory data analysis: Exploratory data analyses were conducted to understand the distribution of the dependent and independent variables. I used the "codebook" command in Stata 14 to determine which variables had missing values and the potential patterns of missingness. For the count data (e.g., number of chronic absences, number of suspensions and expulsions), I looked at the distribution of responses to determine if categories needed to be created or if a linear term should be used. In addition to examining measures of central tendency (e.g., mean and median), I also looked at the range and spread of the variables. In addition, I created histograms and boxplots for each continuous independent variable to further examine the distribution of the variables and potential outliers. Next, I examined loess smoothed non-parametric regressions to check the multiple logistic regression assumption of a linear relationship between any continuous independent variables and the logit transformation of the dependent variable and to determine if categories needed to be created (Jacoby, 2000). Since loess plots revealed that the relationship was not roughly linear, I created categories

based on the median for each of the continuous predictor variables. Variables were coded as described in Appendix B.

Bivariate analyses: For bivariate analyses, I created 2x2 tables and conducted Fisher's exact tests since the sample size in some of the cells were less than 5 due to the small sample size of schools that adopted RAP Club (n=20) (McDonald, 2015).

Model selection: The final multiple logistic regression model included 9 variables that were conceptually important and statistically significant ($p<0.05$) from the bivariate analyses. The final multiple logistic regression model indicated which school-level factors predicted adoption, while controlling for other key covariates. The output of the final logistic regression model reported the odds of adoption among schools that chose to adopt RAP Club compared to schools that chose not to adopt RAP Club (reference group) while controlling for various school-level factors; p-values; and 95% confidence intervals. The fit of the model was assessed with the Hosmer and Lemeshow goodness-of-fit test (Hosmer Jr, Lemeshow, & Sturdivant, 2013).

CHAPTER THREE: MANUSCRIPT ONE
Examining Factors that Influenced the Adoption of a Trauma-Informed Universal Mental Health Intervention in a Large Urban School District
Manuscript prepared for submission to Prevention Science

ABSTRACT

Approximately 35 million children in the U.S. have experienced adverse events (e.g., homelessness, violence, neglect) that increase risk for psychological trauma. To promote positive student emotional functioning, some schools implement evidence-based mental health interventions. Gaps in knowledge remain, however, regarding factors that influence the adoption of school mental health interventions, particularly trauma-informed universal programs. A qualitative multiple-case study design was used to examine multi-level factors that influenced the initial adoption of a trauma-informed universal intervention by school administrators in a large urban school district.

Data were collected from an ongoing intervention trial testing the impact of RAP Club, a trauma-informed universal school intervention, on the emotional and academic functioning of eighth graders. For this descriptive qualitative multiple-case study, semi-structured interviews were conducted with 15 school administrators who adopted and delivered RAP Club in the larger trial to understand factors that contributed to program adoption.

Interview findings indicated that administrators decided to adopt RAP Club in the context of the intervention trial to provide support for students who have experienced trauma and prevent students from engaging in unhealthy coping mechanisms to relieve stress. Examples of contextual factors that contributed to adoption include lack of trauma-informed mental health programs within schools, positive school culture and

climate that align with intervention activities, inadequate district funding for preventive school mental health services, and the benefits of engaging in an academic-community partnership.

These findings fill an important gap regarding factors that influence the adoption of trauma-informed universal mental health interventions in under-resourced urban schools serving students of color who are disproportionately exposed to stress and trauma. The findings highlight potential strategies to increase adoption of the RAP Club intervention in additional schools and promote the adoption of evidence-based interventions in schools more broadly.

Keywords: adoption; trauma; schools; mental health; adolescents

INTRODUCTION

Approximately 35 million children in the United States (U.S.) have experienced at least one traumatic event before age 18 (Child and Adolescent Health Measurement Initiative, 2012). Examples of traumatic events include various types of abuse (e.g., physical, emotional, sexual); emotional and physical neglect; witnessing and/or experiencing domestic, school, or community violence; and the sudden or violent loss of a loved one (SAMHSA, 2015). In the U.S., children of color and children living in poverty are at greater risk of trauma exposure—and they are less likely to have access to mental health services to address trauma-related mental health challenges (Larson et al., 2017; Slopen et al., 2016). Children of color living in urban areas disproportionately experience "compounded community trauma," which is defined as "the experience of children when they witness violence in both their homes and their neighborhoods" compared with children of color living in suburban or rural areas (Alegria et al., 2010).

Exposure to trauma is associated with negative academic, health, and social outcomes across the lifespan. Examples include lower grades, increased probability of mental disorders and chronic conditions, and increased involvement with juvenile and criminal justice systems (CDC, 2016; SAMSHA, 2015).

Schools are an ideal setting to help prevent the harmful effects of trauma, especially since children spend most of their time at school. Public schools are the main provider of mental health services to youth and help increase access for children in low-income families and children of color (Cummings, Ponce, & Mays, 2010; Eiraldi et al., 2015). Efficacious school mental health interventions—such as Positive Behavioral Interventions and Supports (PBIS) and Cognitive Behavioral Intervention for Trauma in Schools (CBITS) (Fazel, 2014; Murphy, 2017)—have been tested and validated for preventing and treating common mental health and behavioral problems (including correlates of trauma). However, few of these evidenced-based practices (EBPs) have been successfully adopted or implemented in under-resourced schools—which are schools located in low-income school districts (Eiraldi, 2015).

Adoption is the intention, initial decision, or action to try an innovation (i.e., new program, service, policy) or EBP and may also be referred to as "uptake" (Proctor et al., 2011). Aarons and colleagues (2011) asserted that the implementation and diffusion literature has mostly focused on the implementation phase with less emphasis on the exploration/adoption (i.e., pre-implementation) phase (Wisdom et al., 2014). There is limited research on the adoption phase of the implementation process in health and human service organizations (Panzano and Roth, 2006; Horwitz et al., 2010; Wisdom et al., 2014). There is also scant research on factors that influence the adoption of

preventive interventions in school settings, especially universal mental health programs in under-resourced schools with large populations of students of color and students from low-income families (Domitrovich et al., 2008; Eiraldi et al., 2015; Vona et al., 2018).

In a recent review of 20 theoretical frameworks relevant to adoption, Wisdom and colleagues (2014) found that leadership, innovation fit with norms and values, and attitudes/motivation toward innovations (i.e., acceptability) were each mentioned in at least half of the theories, and stated that these factors are "clearly important to understanding adoption." For example, Sekhon and colleagues (2017) explained that if an intervention is not found to be acceptable, in most cases it will not be adopted. In addition to the aforementioned factors, the theoretical model of innovation adoption outlines other factors theorized to be relevant to the adoption of innovations (e.g., EBPs) across 5 levels: socio-political and external influence (e.g., policies, financial incentives, social environment supportive of adoption); organizational characteristics (e.g., leadership, climate, size); innovation characteristics (e.g., compatibility with organization's and/or users' norms and values, cost-effective, easy to use); staff/individual characteristics (e.g., individuals' attitudes and motivation for adoption); and client characteristics (e.g., client attitudes, beliefs, and readiness toward change) (Wisdom et al., 2014).

The multi-level conceptual framework developed by Domitrovich and colleagues (2008) is based on a social-ecological framework (Atkins et al., 1998; Bronfenbrenner, 1979) and brings attention to macro-, school-, and individual factors that could influence the implementation quality of school-based preventive interventions. This framework

includes the main constructs from the theory of adoption that are most relevant to the adoption of preventive school mental health innovations/EBPs.

The broadest level of the framework by Domitrovich and colleagues (2008) represents macro-level factors that could influence the implementation of innovations in schools including policies and financing (e.g., fiscal, regulatory, and administrative policies and practices at the federal, state, and district level), leadership and human capital (e.g., availability of qualified mental health professionals in the community to implement school-based programs), and community-university partnerships (e.g., delivering school mental health programs as part of academic research study). The second level of the framework spotlights factors related to the organizational functioning of schools that could influence implementation such as mission-policy alignment, administrative leadership, resources, school culture and climate, etc. (Domitrovich et al., 2008). Researchers have emphasized the importance of understanding the organizational context of schools because students, teachers, administrators, and other school staff are all "embedded in this shared environment" (Ringeisen et al., 2003; Domitrovich et al., 2008). The third level of the framework depicts individual-level factors that can promote or undermine the implementation of school-based preventive interventions including professional characteristics (e.g., education, skills, experience), psychological characteristics (e.g., stress, professional burnout, self-efficacy), and perceptions of and attitudes to the intervention (e.g., acceptability, perceived program benefits) (Domitrovich et al., 2008).

Domitrovich and colleagues (2008) posited that the importance of the individual and contextual factors illustrated in their model varies depending on the stage of

implementation (i.e., program adoption, implementation, or institutionalization) (Fixsen et al., 2005). This study focused on the program adoption phase and used Domitrovich and colleagues' framework to determine which individual-, school-, and macro-level factors influenced school administrators in a large urban school district to adopt a trauma-informed universal mental health intervention as part of participation in a randomized controlled trial (RCT).

Overview of the RAP Club Intervention

The Relax, be Aware, and do a Personal Rating (RAP Club) intervention is a trauma-informed universal school mental health intervention that was designed to be delivered to 8th graders without screening individual students for trauma exposure or mental health issues. The core RAP Club intervention components include emotion regulation skills taught via mindfulness strategies, problem solving and communication skills taught using cognitive behavioral therapy (CBT) techniques, and psychoeducation about the effects of stress and trauma on the mind and body. Mindfulness, CBT, and psychoeducation are all evidence-based strategies for mental health (Shepardson, Funderburk, & Weisberg, 2016). Results from pilot research suggest that participation in RAP Club is correlated with improved academic and social competence, emotion regulation, discipline, and classroom behavior when compared with regular school programming (Mendelson et al., 2015). Additional details of the RAP Club intervention are available elsewhere (Mendelson et al., 2015).

RAP Club consists of 12 group sessions delivered twice a week to 8th grade students. Each intervention session lasts for 45 minutes and delivery is led by a mental health clinician and a young adult community member (e.g., local resident, college or

graduate student)—both are part of the research team. One or two staff members from participating schools receive training to deliver RAP Club during the summer before the school year begins, help co-facilitate 12 intervention sessions during the school year, and participate in weekly supervision calls about the delivery of the intervention during implementation of the intervention.

METHODS

This study utilized a descriptive qualitative multiple-case study design to determine the individual-, school-, and macro-level factors that influenced the adoption of RAP Club as part of participating in a RCT testing RAP Club as compared to a general health education program. A multiple-case study design is used to describe an intervention and the real-life context in which it occurred, and to explore differences within and between cases (Yin 2003; Baxter & Jack, 2008). Data for this study were collected through in-depth interviews with key informants within 1-2 years of school administrators' decision to adopt RAP Club. This study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

Study context

This study was conducted in the Baltimore City Public Schools (BCPS) district in the mid-Atlantic region of the U.S. BCPS serves approximately 80,000 students from pre-k to 12th grade. Almost 80% of students are African American, 11% are Hispanic/Latinx, and 8% are white. Baltimore City has high homicide and poverty rates (U.S. Census, 2017; Madhani, 2018).

Participants

A total of 20 schools implemented RAP Club across the first three years of the RCT: cohort 1 (2016-2017; n=6 schools), cohort 2 (2017-2018; n=7 schools), and cohort 3 (2018-2019; n=7 schools). Contact information for principals at participating schools was obtained by this manuscript's first author (KA) from the Senior Research Program Coordinator of the RAP Club RCT. Principals of these schools were recruited via email, phone, and in-person school visits to participate in key informant interviews about factors that influenced adoption of the intervention. When principals were not available, some other knowledgeable administrator such as the vice principal or interim principal was invited to participate in an interview. Participants were contacted multiple times (3-11 times), and recruitment ended when these repeated contacts did not yield new participants. Of the 6 principals that did not respond, 2 did not respond at all; 4 expressed interest in participating but were unable to be interviewed before recruitment ended due to scheduling conflicts.

Instruments and Procedures

A semi-structured interview guide for principals was initially developed by the RAP Club RCT Principal Investigator (TM) and research team members, and later expanded by the first author (KA) to gain deeper insight into factors that could have influenced adoption of RAP Club. The expanded interview guide was designed to further investigate the multi-level factors that potentially impacted adoption of RAP Club based on the individual-, school-, and macro-level domains present in the multi-level framework developed by Domitrovich and colleagues (2008). Example interview questions are displayed in Table 1.

To examine individual-level factors, administrators and staff members were asked about their perceptions of and attitudes about the intervention, and how their professional background and experiences influenced their decision to adopt the intervention. School-level factors were examined with questions about administrative leadership, mission/policy alignment, decision structure, resources (e.g., student support team, programs to support students' social and emotional development, trauma-informed or other mental health programs), personnel expertise (e.g., types of school mental health personnel), and school climate (e.g., environment, safety, engagement). To examine the macro-level, questions addressed policies and financing, university/community partnerships, and leadership and human capital. The average interview length was 30-45 minutes. All interviews were audio recorded and transcribed verbatim by a professional transcription company.

Data Analysis

Data were analyzed using Yin's 5 phases of qualitative data analysis (Yin, 2011). Qualitative data from the interview transcripts were uploaded to and coded using Atlas.ti, a qualitative data management software program (Hwang, 2008). Preliminary codes were derived inductively from the interview guide and after reading the first 5 interview transcripts. The first author and one of the RAP Club RCT co-investigators refined the initial list of codes that were then applied to the text of the remaining documents. As additional interviews were conducted and analyzed, the codebook was updated as needed. Codes that emerged from and were applied to the transcripts were clustered into substantive categories, and the category codes were compared across interview transcripts (Bowen, 2009). Throughout the iterative disassembling, reassembling, and

interpretation phases, the constant comparative method was used to identify patterns and discover theoretical properties in the data (Glaser & Strauss, 1967; Merriam, 1998; Malterud, 2001; Bowen, 2009). Similarities, differences, and general patterns were identified within and across schools. Themes that emerged from the data were categorized based on the conceptual framework developed by Domitrovich and colleagues (2008). Debriefing between authors was used to enhance the trustworthiness of the data and findings (Denzin, 1989; Merriam, 1998; Creswell, 2007; Baxter & Jack, 2008).

RESULTS

Sample

Key informant interviews were conducted with 15 administrators from 14 of 20 eligible schools (70% school-level participation rate) that adopted and implemented RAP Club (Table 2). The remaining 30% did not participate due to reasons such as non-response to recruitment attempts, scheduling conflicts (i.e., expressed being too busy to participate), and no longer being part of the BCPS system. One principal from cohort 2 declined a formal interview but sent email responses, which were included in the analysis. Participants included 13 principals, 1 interim principal, and 1 vice principal. Interviews were conducted in person at participating schools (n=8) and over the phone when preferred by the participant (n=6). One of the in-person interviews was a joint interview with the principal and vice principal that was requested by the principal since both administrators made the decision to adopt RAP Club. Participants provided oral consent and received $15 for their participation.

Five of the administrators were men and 10 were women. Participating administrators worked at schools with the following grade configurations: pre-k – 8th grade (n=9); K – 8th (n=4); and 6th – 8th (n=1). The enrollment count at participating schools ranged from 197 to 719 students with an average of 443 students. Four of the 14 schools were charter schools. No major differences in reasons for adoption were found between schools or cohorts; thus, results were aggregated across the three cohorts and are presented in detail in the following sections by the individual-, school-, and macro-level factors that administrators reported influenced their decision to adopt RAP Club (Table 3).

Individual-Level Factors

The primary individual-level factors that influenced adoption were professional characteristics (e.g., education, experience) and perceptions of and attitudes about the intervention (e.g., acceptability, perception that RAP Club could provide coping mechanisms for trauma exposure among students). Themes are described below.

Professional Characteristics

Administrators interviewed for this study connected their decision to adopt RAP Club with their educational background and professional experiences in the field of education. For example, some principals had education and/or training in the importance of meeting the holistic needs of students—including academic, social, and emotional. An example from one principal's experience is below:

> *"My master's program in teaching was at MICA [Maryland Institute College of Art] and that program is really deeply rooted in the mind, body, and spirit of the child and so always attending to the whole child in that way. And then in my doctoral program up at Columbia University, I took a number of classes in*

conflict resolution, in what's the word? Like reconciliation….. And so naturally that's what I'm about. And so I think that brought me there." (Principal, School 9)

A few administrators in this study stated that their 20-30 years of experience working at schools in this specific urban school district influenced their decision to adopt RAP Club. They discussed understanding the needs of BCPS students and how the program could help students to understand and cope with trauma during adolescence, which is a critical developmental period. One principal described the influence of her professional experiences on her decision to adopt RAP Club in the following way:

"Professionally—This is my 20th year in education, so I know what children need. I have a lot of experience dealing with Baltimore City students, urban students, and the different traumas that they go through, so it's always good to have something in place ahead of the problems that can occur. And just going through adolescence— Studying with my middle school students, they really are going through changes, and they need a program. They need something. They need an outlet...So, I guess just my experience with the students and their development." (Principal, School 7)

Intervention perceptions and attitudes

Each of the administrators interviewed for this study reported acceptability of RAP Club and demonstrated positive attitudes towards the intervention. Common themes across schools were that administrators decided to adopt the RAP Club intervention to address the needs of students and to provide additional programming to support students. Most of the participating administrators described RAP Club as a useful strategy for educating students about the impacts of stress and trauma and providing students with healthy coping mechanisms.

Almost all administrators stated that their students often witness and experience trauma in their home, school and/or neighborhood. Forms of trauma discussed in the interviews include separation from their birth parents due to incarceration or unexpected

death; parent(s) struggling with substance abuse; violence (e.g., domestic, fighting or bullying at school); poverty; food insecurity; crime (e.g., robbery, burglary, murder); housing instability (including homelessness and living with different family members); and subpar housing and neighborhood conditions (e.g., vacant homes, litter). Several administrators stated that students have academic and non-academic needs, some of which are connected to trauma, and that RAP Club was adopted to help students cope with trauma and the stressors in their lives. One principal's description of this theme is below:

> *"There are a lot of specific needs that our students have, and they need to be well informed to be able to make healthy choices down the road and for the future…. It goes from very, very basics of food choice and health to drugs, to how to talk [about] things, coping skills to deal with the trauma that a lot of them have to live with each day. There are a lot of things that our students need, and many of them need all of the above and some of them may need just support in one or two areas. That's all besides the academic support that they need….[RAP Club] provides support for the students and gives them a coping mechanism and strategies that they can implement into their daily lives." (Principal, School 4)*

Furthermore, many administrators in this study acknowledged that the needs of their students exceeded the availability of school programming to address their needs. They described adopting RAP Club to help fill in the programming gaps and provide students with additional support. An example of a quote that captures this perspective is as follows:

> *"I needed something to help children deal with issues. As you know, it takes a village to raise a child and just felt like I didn't have enough things in place here at the school to help support children dealing with issues and things like that. [RAP Club] Program came along and I thought it would be something interesting for the students and we got on board." (Principal, School 3)*

A couple administrators mentioned that RAP Club provided a safe space for their students to discuss the trauma that they experience, in a group setting, with peers that

might be going through similar situations. Some administrators felt that RAP Club could also benefit students that school staff might not know need help. For example, one principal said:

> *"I sort of look at [RAP Club] like another net that might catch a few students up in it and meet the needs that they have…there could be students who are going under the radar that we don't even know are struggling with stresses around them, because there're some that wear it on their sleeve and there are some that hide it under their cloth…So maybe it would meet the needs of some of those students that we're not even really aware of or haven't really tapped into." (Principal, School 12)*

Prevention and skill-building were described by many administrators in this study as appealing aspects of RAP Club. The intervention's ability to equip students with communication, interpersonal, and problem-solving skills were also cited by these administrators as important components of the intervention. Several administrators took a proactive approach and mentioned that they adopted the intervention because they wanted to improve positive decision-making and prevent students' involvement in antisocial behaviors (e.g., drugs, violence, crime). An example of this perspective from one administrator is below:

> *"[RAP Club] was an opportunity to address some of the topics and concerns that we have for our outgoing eighth graders and them having the opportunity to hear from someone else other than administration, teachers, and possibly young people close to their age so they will be more receptive and make better decisions….We want to utilize every possible tool or program we can think of that's going to increase our chances of saving a young life…That's where the motivation and that's where the intention comes…to give our young people a fighting chance to save their lives." (Interim Principal, School 5)*

A few administrators conveyed that they felt that RAP Club would help their students with stress management in middle school and would prepare them for stress that they might experience in high school. A couple administrators also mentioned the

potential positive impact that RAP Club could have on the outcomes of their students across the lifespan. An example is below:

> *"It's a proactive approach to seeing if we gave our eighth grade students a mental health toolbox. If they had this toolbox of resources and strategies that they could use to exhibit healthy lifestyle practices, would this toolbox help change the outcomes and dynamics for them as they leave, go to high school and become adults and become contributing members of Baltimore City or wherever they migrate to?" (Principal, School 14)*

School-Level Factors

The primary school-level factors that administrators in this study reported as influential in their decision to adopt RAP Club are administrative leadership, decision structure, mission/policy alignment, personnel expertise, school culture, and school climate. The key themes for each of these categories are described below.

Administrative leadership

Principals were the first in the school to be contacted by the RAP Club RCT research team and were the primary decision-maker to adopt the RAP Club intervention as part of participation in the RAP Club RCT. Although other school staff were consulted about the program in some schools, principals made the ultimate decision to adopt the RAP Club intervention at all schools. Most administrators interviewed for this study expressed a commitment to using innovative programs and practices to support their students' mental health and had positive attitudes about preventive mental health interventions. One principal's view of mental health—which aligns with RAP Club's goals—is below:

> *"Maybe the District and the City view mental health as services that are meant—that are provided once an individual is in crisis. And I've always thought of mental health as the proactive approach to growing one's mind in a manner that*

allows you to be functional, and intentional in your thoughts and actions, as opposed to reactionary." (Principal, School 14)

Several administrators mentioned having resources and programs relevant to mental health in their school such as social and emotional development programs (e.g., restorative practices, Second Step, etc.), yoga, and a student support team (SST). One principal described their commitment to providing supportive programs to students as follows:

"In our earlier grades, we have Second Step, which is like a social and emotional curriculum as well. Part of restorative practices is Circles, so building relationships. So that kind of covers the whole school. We also have prevention and intervention for early learners, which is PIEL, which looks at behavior, conduct and grades in ways to support kids. Their whole process is there to avoid the IEP [Individualized Education Plan for special education students] process. Early intervention, sometimes that hits on students that have had or are going through issues at home, so I think that [includes] counseling… there are programs that pop up that support social and emotional and just wellbeing of kids. But most of the supports I've named are here daily." (Principal, School 11)

Although some of the administrators described having programs like restorative practices that use trauma-informed approaches, none of them described having programs like RAP Club. Thus, the additional instruction about how to practice mindfulness, recognize and respond to the effects of trauma, and improve decision-making, communication, and problem-solving skills in one program, was unique for administrators.

Decision structure

At a couple of schools in this study, the principal decided to adopt the RAP Club *first* and then discussed it with the school staff members that would be trained to deliver RAP Club and/or school staff considered to be mental health providers such as social workers, psychologists, and guidance counselors. At the other schools, the principal

discussed the possibility of adopting the program with school staff *before* making the final adoption decision. Overall, principals mentioned that the following school staff were involved in the decision-making process to adopt RAP Club: other administrators (e.g., assistant/vice principals, directors of culture and climate, curriculum directors); school mental health providers; and/or middle school teachers. Principals at the participating schools included different combinations of personnel when deciding whether to adopt RAP Club. One principal's explanation of the decision-making process to adopt RAP Club is below:

> *"When something comes, we first see, like, does it sort of fit our mission as a school and align with that, and also do we think it would be valuable for our students? When [RAP Club] came to me, I then talked with the middle school team to decide if they thought it would be something that would add value to our students, and I think also our students seeing that, 'This is what a [research] study is like.'"(Principal, School 12)*

Most principals said that they discussed the potential benefits of RAP Club with their staff. One principal specifically mentioned that she also discussed potential obstacles of adopting the program with staff members:

> *"[We talked about] what we see as the benefits and what would be the obstacles, and are they worth the obstacles? Because, you know, nothing is really easy to do around here. Everything takes people being flexible and changing schedules, and then people covering classes." (Principal, School 12)*

<u>Mission/policy alignment</u>

A few administrators interviewed for this study said that RAP Club's alignment with their school's mission influenced their adoption of the program. These administrators described that RAP Club aligned with elements of their school mission such as addressing challenges that impact learning and providing supportive programs for students that promote academic achievement. For example, one principal said: *"[RAP*

Club] fits in perfectly…How do we help them with the trauma; how do we help them cope—If the child can't cope, they're not going to learn, so we have to address all of their needs. So, it fit in perfectly" (Principal, School 7). While no administrators specifically mentioned having an official school policy that included trauma-informed or preventive mental health programs, a couple administrators explained that RAP Club aligned with their school's current priorities of addressing trauma, promoting mental health, and fostering healthy relationships within the school.

Personnel expertise

Almost all administrators mentioned a shortage of mental health personnel (e.g., guidance counselor, psychologist, social worker). All schools usually have a full-time guidance counselor, but mental health clinicians (i.e., psychologists and social workers) are usually part-time and not present every day of the week. Most administrators said that they have a psychologist once a week that only works with special education students and/or students that have mental health services included in their IEP. Most administrators said that they have a social worker for 1-3 days during the week. A few principals extended their social worker's position to be full-time to provide mental health support to a larger number of students. However, the role of school mental health personnel is usually to provide counseling or other types of mental health *treatment—prevention* of mental health and behavioral disorders is often not the priority. Furthermore, only one administrator mentioned that trauma and mental health is included in the 8th grade health class.

Just a couple administrators that adopted RAP Club said that they currently have or previously had a trauma-informed preventive mental health program in their school.

RAP Club provided mindfulness techniques, education about the effects of trauma, and social and emotional skills in the areas of self-management (e.g., stress management), social awareness, responsible decision-making, and relationship skills (e.g., communication). Regarding the skills that RAP Club could provide, one principal said:

> "*These are skills we're wanting to build with the young people. And with the focus of wanting to develop these skills ourselves but not necessarily having all of the skills ourselves to teach it, a program like this is super helpful to help jump-start us as well." (Principal, School 9)*

School culture

A few administrators mentioned that RAP Club fit with their schools' culture—defined by the conceptual framework guiding this study as shared norms, values, and beliefs of administrators and school staff—of working together to provide a nurturing school environment that supports the mental, social, and emotional well-being of their students. One principal explained that RAP Club's focus on building skills that help maintain healthy relationships was aligned with her school's transformation into a restorative school culture:

> *"We're really trying to move away from punitive to restorative… flipping the whole culture of the school from punitively reacting to behaviors to preventing and building skills in relationships to help minimize the behavioral challenges and conflicts and to give kids skills in how to like respond to it and learn from it and move forward…"(Principal, School 9)*

School climate

School climate is considered to be the organizational personality of a school and is known to include perceptions of major dimensions of school life including safety (e.g., fighting, bullying, substance use), relationships and engagement, and the environment (e.g., physical, classroom). Nearly all administrators that were interviewed for this study discussed having a positive school climate (e.g., no major issues with discipline or

physical environment of the school). A couple administrators mentioned that their school's climate is conducive to learning and that they strive to achieve a supportive environment by meeting students' needs, stimulating the development of positive self-esteem, and providing programs like RAP Club that help students maintain healthy relationships with others. Most discussions about school climate were about positive relationships between staff, students, and families, which RAP Club supports through instruction on managing emotions, conflict resolution, and effective communication. Several administrators emphasized the importance of having open and supportive relationships between staff, students, and families, which aligns with the ways in which RAP Club promotes the social and emotional development of students. For instance, RAP Club provides students with strategies for maintaining positive relationships with others, education and activities that help improve emotional functioning, and opportunities for staff to provide social support to students by checking in with them. An example of one principal's perspective of supporting students' social and emotional well-being through programming like RAP Club and relationships within the school is below:

> *"Students have ample adults to check in with or to go to if they need any assistance and that is part of our core programming, we believe that it is very important to make sure that we are supporting our scholars' social and emotional health. Academics is very important, intellectual and physical health is important for the whole child but that social and emotional portion is a way to check in with children prior to them even starting their instructional day so that they can be successful in all other areas." (Principal, School 6)*

Macro-Level Factors

At the macro-level, policies and financing (e.g., district policies, lack of district financing of preventive school mental health services), leadership and human capital (e.g., partnerships with community mental health organizations), and community-

academic partnerships (e.g., partnerships with local universities for mental health programs and services) were the main factors that influenced adoption of RAP Club, according to administrators that were interviewed for this study.

Policies and Financing

Policies: Almost all the administrators interviewed for this study mentioned that addressing trauma and promoting mental health are major priorities of BCPS. A few of these administrators specifically mentioned that these priorities are part of the "student wholeness" component of the district's strategic plan for student success (also called the Blueprint for Success or Blueprint; Baltimore City Public Schools, 2017). They reported that district leadership has articulated the new vision through printed and electronic materials, professional development seminars and training sessions, and fostering multisectoral partnerships for mental health programming in schools across the district. An example of an administrator discussing the Blueprint and the district's focus on social and emotional health is below:

> *"It's a big push this year. It was last year, also, with the Blueprint…So, at every meeting I go to, a portion of the meeting is focused on social/emotional health and what are you doing, giving us ideas. So, since [district CEO] has been with us, we are focusing on it more. We weren't doing it at all in the past." (Principal, School 7)*

Four of the administrators that adopted RAP Club and participated in this study worked at charter schools and said that they don't participate in the same professional development activities as other public schools. However, they mentioned being aware of the district's priorities relevant to mental health. Many of the administrators of charter schools that participated in this study said that they were already implementing programs that focus on social and emotional learning before adopting RAP Club.

Before the Blueprint, the school district's mental health policies were mainly focused on special education students. Administrators explained that the district assigns mental health clinicians to schools based on the population of students with identified special needs (e.g., diagnosed mental health and/or behavioral disorders, learning disabilities). Although mental health clinicians are not assigned to schools by the district for preventive mental health programs, the student wholeness policies in the Blueprint encourage schools to provide programs that support students' social and emotional development. Despite these efforts, a couple administrators expressed frustration that the district is not doing more to support the mental health needs of students in the general school population that do not have identified special education needs.

Financing: The school district funds school mental health clinicians based on the number of students with special needs. The district pays for at least one psychologist, social worker, and/or guidance counselor per school, but the number of mental health staff and their hours (e.g., part-time vs. full-time) varies at each school based on number of students with special needs. Principals are responsible for funding preventive mental health programs and services from their annual school budget. Principals must make decisions about whether additional funds should be allocated from the school budget to extend hours of psychologists and social workers and/or to bring in external mental health programs that cost money. One principal mentioned that the district encourages principals to allocate funds towards mental health programming in school budget guidance documents:

> *"So principals have a lot of autonomy to budget their schools. There are certain guidance documents that go along with how you staff and budget your school. So within that guidance document, principals and teams should provide mental health or things that promote student wholeness. I made a part of our priority in*

> *having someone on staff. Now again, all schools might not be able to do that because of funding. So, you know, it still depends on the funding that you have in order to do that, you know. That costs the school. It is not a free service." (Principal, School 13)*

Programs that are beneficial to students and free to schools were reported as the optimal choice for principals with tight school budgets. Many administrators mentioned adopting RAP Club because it was a program that was free to the schools and seemed to be beneficial to students. An example of this perspective is below:

> *"Well, the fact that I didn't have to pay for it, one. Finances are tight, and that was a bonus because I'm always looking for something to help them out, period…. So, I would say I just want everything I can get for my kids because they have a lot of issues. Not having to worry about that financial burden was a big help." (Principal, School 7)*

A couple administrators mentioned that stipends provided to school staff that were trained to deliver RAP Club were also helpful. One principal's description of this is below:

> *"Well, one thing is that the teachers who chose to participate [in RAP Club] are compensated. That's really helpful because especially being a small charter school teachers do way beyond what teachers in larger schools do; like they wear many, many hats…And so, you know, I'll provide stipends in the areas where I can. So something like this because it's above and beyond the compensation is really helpful." (Principal, School 9)*

<u>Leadership and human capital</u>

Some administrators discussed having partnerships with local community mental health organizations for school mental health programming (e.g., individual, group, and family counseling, yoga, mindfulness programs). However, they mentioned that they still wanted to adopt RAP Club because the intervention content would provide an additional level of support for students that the other program(s) related to mental health in their school did not provide. A couple administrators mentioned that the shortage of school

mental health clinicians was a reason why they sought partnerships with universities and community mental health agencies. An example of a principal's explanation for seeking partnerships for mental health services is below:

> *"If you're asking how much does the district provide to me, I have a mental health clinician a day a week. Uno. One day. Seven hours…Uno person, seven hours. If you ask me do my families have access to mental health services outside of what's provided by the district, yes. Because we go out and develop all of these partnerships." (Principal, School 14)*

Only one administrator mentioned lack of access to mental health services in the broader community outside of schools:

> *"I think probably 85 percent of the things we experience within city schools that we will say are harmful or potentially harmful behaviors go back to the lack of access to mental healthcare in the minority community and the stigmas attached to it." (Principal, School 14)*

Community-university partnerships

Some administrators wanted to specifically partner with the RAP Club research team because the university partner is respectable and renowned for high quality research. Some administrators indicated that they decided to adopt RAP Club because they had a previous positive experience working with the university that was offering RAP Club to deliver a different health program to their students. They expressed enthusiasm to engage in another partnership with the university that they perceived would be beneficial to their students. A couple examples of these perspectives are below:

> *"I think the research makes a difference, or the quality of the program makes a difference. I'm not going to just partner with anyone. Knowing that Hopkins, you know, is going to be research-based, is going to have some theory behind it, that helps me make some decisions on, you know, who I partner with. I'm not going to just partner with anyone and, you know, we all know Hopkins."*
> *(Principal, School 13)*

Some administrators had or currently have partnerships for mental health programming with the university offering RAP Club and/or other universities in the city. Some principals said that they value working with universities because of the expertise and benefits associated with partnering with universities (e.g., intervention materials, resources, funding, additional staff including young adults to deliver interventions, etc.). They also mentioned the benefits of having external people—especially young adults—work with their students, rather than administrators and teachers within the school.

DISCUSSION

It is necessary to examine factors that influence the adoption of school mental health innovations and EBPs, especially because adoption must occur before implementation can begin. Additionally, understanding the complex process of adoption may lead to the development of strategies and interventions to increase the uptake of school mental health innovations and EBPs (Fixsen et al., 2005; Wisdom et al., 2014). This study extends existing implementation science literature by examining individual-, school-, and macro-level factors that influenced 15 school administrators (e.g., principals, vice and interim principals) in a large urban school district to adopt a trauma-informed universal mental health intervention as part of participation in a RCT.

At the individual level, positive perceptions of and attitudes about the intervention were the largest influencers of RAP Club adoption. These are relevant to acceptability, which previous research has demonstrated as a key element to adoption. Previous studies have described the importance of acceptability and the relationship between acceptability and adoption (Domitrovich et al., 2008; Wisdom et al., 2014; Sekhon et al., 2017). For example, Wisdom and colleagues (2014) found that attitudes/motivation toward

innovations was mentioned in at least half of the 20 theoretical frameworks that they reviewed and identified as relevant to adoption. The perception that RAP Club could be used to address stress and trauma exposure among students was described by many administrators in this study as a reason why they adopted the intervention. Prior research suggests that the perception that an intervention is a useful strategy for addressing a local problem and that it is better than the current practice is associated with adoption (Elias et al., 2003; Pankratz et al., 2002; Ringwalt et al., 2003; Domitrovich et al., 2008; Wisdom et al., 2014).

At the school level, administrative leadership, decision structure, and personnel expertise were primary factors that influenced adoption of RAP Club. Administrators that participated in this study demonstrated a commitment to using innovative programs and practices to support their students' mental health. Previous studies have emphasized that school administrators "can help transform schools into places that are committed to using innovative programs and practices" (Domitrovich et al., 2008). Administrators not only make the decision to adopt interventions, but also allocate time in the school schedule for program implementation and commit staff to participation in and implementation of intervention activities. Over 10 previous studies have shown positive associations between leadership variables (e.g., CEO's influence, champions, managerial support for innovation, prior experience in adoption, etc.) and adoption (Wisdom et al., 2014).

Although top-down leadership has been reported to be negatively associated with adoption (Backer et al., 1986; Wisdom et al., 2014), top-down leadership in this study (defined as principal not consulting staff about RAP Club before making adoption

decision) still resulted in adoption for a few schools. However, most principals described using a more democratic decision-making process by discussing the possibility of adopting RAP Club with other administrators, school mental health providers (e.g., social workers, psychologists, guidance counselors), and/or middle school teachers. The lack of personnel expertise in trauma-informed universal mental health interventions, shortage or lack of staff with expertise in prevention of mental health and behavioral disorders, and shortage of mental health personnel were all important factors that influenced the adoption of RAP Club in participating schools. This is consistent with prior literature that highlights shortage of mental health staff in under-resourced schools (Eiraldi et al., 2015).

Although Wisdom and colleagues (2014) identified innovation fit with organizational norms, values, and cultures as critical to adoption, only a few administrators that participated in this study explicitly mentioned that RAP Club aligned with their school's mission/policy. For most administrators, school culture and climate were not discussed in direct relationship to adoption, but they described having a positive school climate and a school culture that is supportive of mental health innovations and EBPs. In school mental health literature, school culture has been theorized to be associated with adoption of mental health innovations and EBPs (Domitrovich et al., 2008). Furthermore, researchers have noted that schools that have a positive school climate (i.e., nurturing, supportive, and safe environment) may be more willing to commit to school mental health interventions (Bradshaw, Koth et al., 2008; Domitrovich et al., 2008).

The main macro-level factors that influenced adoption of RAP Club are policies and financing and community-university partnerships. Administrators that participated in this study mentioned that RAP Club was aligned with the district's priorities of addressing trauma and providing school mental health programs. Although these administrators did not explicitly state that the Blueprint is the district's current policy for education reform, the text of the Blueprint provides evidence that it is a set of guidelines, standards, and actions to be implemented for 5 years to achieve their long-term goal of building "a generation of young people with the skills, knowledge, and understanding to succeed in college, careers, and community, not just here in Baltimore but in any city in the world" (BCPS, 2017). If the district did not provide professional development, seminars, and information about the importance of trauma and mental health, some administrators might not have understood the connections between mental health and academics or felt compelled to adopt RAP Club.

Although the district's financing structure does not provide funding to all schools for preventive mental health interventions, the district's Blueprint policy still encourages principals to offer these types of programs to their students by way of allocating funds from the school's budget or partnering with a university, agency, or business in the community. Several administrators mentioned that the free cost of RAP Club was one of the main reasons why they decided to adopt the intervention. This aligns with previous studies that indicated that innovations with an "unambiguous advantage in cost-effectiveness compared to existing practice are more likely to be adopted" (Damanpour & Schneider, 2006; Damanpour & Schneider, 2009; Frambach & Schillewaert, 2002; Graham & Logan, 2004; Wisdom et al., 2014).

Community-university partnerships was another macro-level factor that seemed to heavily influence the adoption of RAP Club. Many administrators mentioned trusting the university that was offering RAP Club because of its expertise, reputation for rigorous research, and previous positive experiences working with the university (or other universities) to implement mental health and/or other school-based programs. Administrators cited benefits of partnering with a university to deliver interventions including additional staff to help implement the intervention; funding and resources (e.g., stipends, supplies, materials, incentives for students, etc.); expertise of university partners; and involvement of young adults who could serve as mentors for students. To bridge the research-to-practice gap, it is important for academic researchers to seek partnerships with schools to increase the uptake of school mental health innovations and EBPs (Domitrovich et al., 2008).

Limitations

Perceptions on adoption were only obtained from administrators at schools that adopted and implemented RAP Club within the context of a RCT. A few schools that responded via email to the invitation to participate in the RAP Club RCT indicated that factors such as too much programming and staff shortage influenced their decision not to adopt the program. While these perspectives may not be representative of all the reasons schools did not adopt RAP Club, they suggest a few reasons that warrant further investigation. Some, but not all, administrators were asked specifically about participating in a RCT. Future research should obtain perspectives of administrators that declined to participate in the RAP Club RCT (or other school-based preventive interventions) to adequately compare schools that adopted the intervention with schools

that did not adopt the intervention. Future studies should further explore how research participation influences school administrators' uptake of preventive school mental health interventions.

Although the participation rate was 70% (15 administrators from 14 of 20 eligible schools), perspectives from 6 principals that adopted RAP Club are missing from this analysis. Of the 6 principals that were not formally interviewed, one provided brief email responses about adoption, one expressed interest in being interviewed but stopped responding to recruitment attempts, one that had moved out of the state declined to be interviewed, and the last three did not respond to any recruitment attempts.

Another potential limitation is that interviews were collected during different phases of implementation, which may have led to recall bias. Administrators of schools that adopted RAP Club during cohorts 1 and 2 were conducted after implementation of the intervention, while interviews with cohort 3 administrators were conducted before or during implementation (except for one principal that was interviewed after implementation due to scheduling conflicts). Ideally, interviews about adoption should occur during the pre-implementation phase, which would mitigate recall concerns about factors that influenced adoption.

Conclusion

These results suggest that the decision of administrators in a large urban school district to adopt a trauma-informed universal mental health intervention was influenced by individual-, school-, and macro-level factors. Understanding these factors could lead to the development of strategies and interventions to increase the adoption of trauma-informed and other school mental health innovations and EBPs—especially in under-

resourced schools and schools with a large population of students of color who might be disproportionately exposed to trauma.

IMPLICATIONS FOR SCHOOL HEALTH

This study provides evidence that principals are the primary decision-maker in schools when it comes to adopting school mental health interventions, regardless of whether or not the principal has any background or training in mental health. Findings from this study could be used by researchers to emphasize intervention components that align with the district policies and priorities, support that will be provided by the research team, and potential benefits for students that participate in the intervention when designing recruitment materials about school mental health interventions. Recruitment materials should also focus on aspects of the intervention that would matter most to principals (e.g., potential positive impact of the intervention on students, low or no cost, alignment of intervention with school's mission). For mental health interventions that are part of a multi-year RCT, researchers could assess factors that influenced adoption of the intervention in schools after the first year of implementation to determine recruitment strategies for increasing adoption in future years of the RCT.

School district leadership in Baltimore City has laid the foundation to facilitate the adoption of school mental health innovations and EBPs by establishing policies that urge schools to provide social, emotional, and academic support to students. Other school districts that do not have preventive mental health or student wholeness policies could establish these policies to increase adoption of preventive school mental health interventions. In addition to professional development that many districts already provide about mental health and the effects of trauma on students, districts could also

provide funding and resources. For example, district leadership could create and disseminate a resource guide that includes potential partners in the community including universities, community mental health agencies, and foundations.

TABLES

Table 1 Sample questions from semi-structured interview guide

Interview questions that specifically asked about adoption of the intervention included the following:

- Tell me about the specific factors that influenced your decision to adopt the RAP Club intervention
- What influenced your decision to partner with [the university] on the 8th grade wellness project?

Domains from Conceptual Framework	Sample Interview Questions
Individual-Level Factors	
• Professional characteristics	• How did your professional background and experiences influence your decision to allow the RAP Club Program to be delivered in your school?
• Perceptions of and attitudes about the intervention	• What is your understanding of the main purpose of RAP Club?
School-Level Factors	
• Mission/policy alignment	• Based on what you know about RAP Club, how do you think it fits with your school's overall values and priorities?
• Personnel expertise	• Which staff members are considered to be mental health providers?
• Resources	• Tell me about any current programs at your school that support students' social and emotional development.
Macro-Level Factors	
• Policies and Financing	• To what extent do you feel that the school district is prioritizing trauma exposure and other mental health concerns among students? Describe how mental health services and programs are funded at the district and school levels?
• Leadership and human capital	• Describe any partnerships that your school has with local community mental health organizations.
• Community-university partnerships	• What is your opinion about the benefits and challenges of

	partnering with a university to deliver a program like RAP Club that is part of an academic research study?

Table 2 Background characteristics from n=15 school administrators

School	Sex/Gender	Role	School Configuration	Management Type	School Size*	Cohort
1	F	Principal	Pre-k - 8th	Traditional	605	1 n=5
2	F	Principal	Pre-k - 8th	Traditional	749	
3	M	Principal	Pre-k - 8th	Traditional	347	
4	F	Principal	Pre-k - 8th	Traditional	470	
5	M	Interim Principal	Pre-k - 8th	Traditional	452	
6	F	Principal	6th - 8th	Charter	347	2 n=4**
7	F	Principal	K - 8th	Traditional	415	
8	F	Principal	K - 8th	Charter	719	
	M	Vice Principal				
9	F	Principal	K - 8th	Charter	236	3 n=6
10	F	Principal	Pre-k - 8th	Traditional	488	
11	M	Principal	Pre-k - 8th	Traditional	439	
12	F	Principal	K - 8th	Charter	197	
13	F	Principal	Pre-k - 8th	Traditional	479	
14	M	Principal	Pre-k - 8th	Traditional	263	

*School size is enrollment count at time of adoption

**One principal from Cohort 2 is not included in this table since she was not formally interviewed but provided responses via email that are included in the analysis

Table 3 Summary of factors that influenced adoption of RAP Club

Domains from Conceptual Framework	Key Themes from Data
Individual-Level Factors	
• Professional characteristics	• Educational background in social/emotional learning, conflict resolution, and meeting the needs of the whole child • Professional experiences working in the field of education
• Perceptions of and attitudes about the intervention	• Acceptability of intervention • Perception that intervention would help address student mental health needs • Intervention filled in the gaps of what current school programming does not provide • Mental health education and promotion • Prevention of unhealthy behaviors • Social and emotional skills (e.g., communication, interpersonal, problem solving, positive decision-making, stress management) • Perceived positive impact of intervention on students across the lifespan
School-Level Factors	
• Administrative leadership	• Administrators committed to using innovative programs and practices to support their students' mental health
• Decision structure	• Decision to adopt is made by solely by principal • Decision to adopt is made by principal in collaboration with other administrators and staff members
• Mission/policy alignment	• RAP Club aligned with school's mission and/or priorities of addressing non-academic and academic needs of students
• Personnel expertise	• Shortage of school mental health personnel • Lack of staff with expertise in prevention of mental health and behavioral disorders
• School culture	• Shared beliefs of being proactive and addressing underlying issues, such as trauma, that could impact students' behavior, learning, and academic achievement

	• Administrators working with their staff to provide a nurturing school environment that supports the mental, social, and emotional well-being of their students
• School climate	• Positive perceptions of safety, relationships, and the school's environment • RAP Club fit with school's efforts to maintain positive relationships between staff, students, and families
Macro-Level Factors	
• Policies and Financing	**Policies** • Intervention aligned with district policies and priorities for promoting student wholeness (including mental health) and equipping students with social and emotional skills **Financing** • Funding not provided to all schools from the district for preventive mental health programs • Funding was provided to implement RAP Club
• Leadership and human capital	• RAP Club provided an additional level of support for students that programs sponsored by community mental health organizations did not provide • Lack of access to mental health services in the broader community
• Community-university partnerships	• RAP Club attached to academic research study from a reputable university • Previous positive experiences working with universities for mental health programming

CHAPTER FOUR: MANUSCRIPT TWO

Examining School-Level Factors Associated with the Adoption of a Trauma-Informed Universal Mental Health Intervention in Baltimore City Public Schools

Prepared for submission to Administration and Policy in Mental Health and Mental Health Services Research

ABSTRACT

Scant research exists regarding school-level factors that influence the adoption of trauma-informed universal school mental health (SMH) interventions. This study examined school-level factors associated with adoption of one such intervention in a large urban school district. School district survey and administrative data were analyzed using multiple logistic regression models to determine school-level factors associated with program adoption in 20 schools. A collaborative decision-making process across administration and staff was significantly associated with program adoption (AOR=30.5; $p<0.05$; 95% CI=2.08-446). Results will inform development of strategies to increase the adoption of trauma-informed universal SMH interventions.

Key words: adoption; school mental health interventions; urban schools; school climate

INTRODUCTION

Exposure to childhood trauma is a significant public health problem that disrupts physiological, psychological, and social developmental processes (Grant & Lappin, 2017) and is associated with negative health, academic, and social outcomes across the lifespan (Centers for Disease Control and Prevention, 2016; Felitti et al., 1998; Metzler, Merrick, Klevens, Ports, & Ford, 2017; Substance Abuse and Mental Health Services Administration & National Child Traumatic Stress Network, 2015). Additionally, a recent study estimated that the economic burden of child maltreatment in the United States is $428 billion for lifetime costs incurred annually (Peterson, Florence, & Klevens, 2018). This is likely to be an underestimation of the costs of childhood trauma since the study only estimated costs of a few types of traumatic experiences (e.g., neglect, physical and sexual abuse, psychological maltreatment). Researchers have called for a systematic public health framework to prevent trauma exposure, reduce negative outcomes among children exposed to trauma, and increase efforts to detect and treat trauma-related mental and behavioral disorders (Grant & Lappin, 2017; Magruder, McLaughlin, & Elmore Borbon, 2017).

Schools are an ideal setting to prevent and reduce the harmful effects of trauma by offering mental health programs. Public schools are the main provider of mental health services to youth and help increase access for children of color, children from low-income families, and children living in challenging urban environments (Cummings, J. R., Ponce, & Mays, 2010; Eiraldi, Wolk, Locke, & Beidas, 2015; Gregory, Henry, & Schoeny, 2007; McKay et al., 2004). Numerous school mental health interventions—such as Positive Behavioral Interventions and Supports (PBIS) and Cognitive Behavioral

Intervention for Trauma in Schools (CBITS) (Fazel et al., 2014; Murphy et al., 2017)—have been developed and validated for preventing and treating mental health and behavioral disorders, including those associated with trauma. However, few of these promising interventions or evidenced-based practices (EBPs) have been successfully adopted or implemented in under-resourced schools—which are schools located in low-income school districts (Eiraldi, 2015).

The field of implementation science holds promise for reducing the research-to-practice gap in school mental health by producing knowledge and applying strategies to increase the adoption, delivery, and sustainability of mental health interventions in schools (Lyon, n.d.). Adoption is the "intention, initial decision, or action" to try an innovation or EBP and is also referred to as "uptake" (Proctor et al., 2011). Most implementation research focuses on the implementation phase (e.g., fidelity). In contrast, less focus has been placed on examining the adoption (i.e., pre-implementation) phase (Aarons, Hurlburt, & Horwitz, 2011; Wisdom et al., 2014).

Previous studies suggest that characteristics of the inner organizational setting—the immediate context in which implementation occurs—have a major influence on the use of innovations and EBPs (Cummings, G. G., Estabrooks, Midodzi, Wallin, & Hayduk, 2007; Henggeler et al., 2008; Lyon, Aaron R. et al., 2018; Scott, Estabrooks, Allen, & Pollock, 2008). There is scant research on factors that influence the adoption of preventive mental health interventions in schools—especially in under-resourced schools with large populations of students of color and students from low-income families (Domitrovich et al., 2008; Eiraldi et al., 2015; Vona et al., 2018). In particular, little is known about school contextual factors that may influence the adoption of mental health-

focused preventive interventions in urban schools (Gregory et al., 2007; Shinn, 2003). Domitrovich et al. (2008) asserted that understanding the context of schools is critical for the implementation of interventions because students and school staff are all embedded in this shared environment (Ringeisen, Henderson, & Hoagwood, 2003).

One of the best ways to understand the context of schools is to examine school climate, which is defined by the National School Climate Council (NSCC) as "patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013). School climate is considered to be the organizational personality of a school (Domitrovich et al., 2008; Halpin & Croft, 1962). However, there is still not a national consensus among researchers and practitioners about what dimensions are essential for valid assessment of school climate (National School Climate Center, n.d.; Thapa et al., 2013). For example, the U.S. Department of Education's school climate model includes engagement, safety, and the environment (National Center on Safe Supportive Learning Environments, 2019). National School Climate Center (NSCC, n.d.) suggests that the 4 major areas that school climate assessment needs to include are safety, relationships, teaching and learning, and the external environment. After comprehensively reviewing school climate literature, Thapa et al. (2013) argued that the five essential dimensions of school climate are safety, relationships, teaching and learning, institutional environment, and the school improvement process. While numerous studies have examined the relationships between school climate and student achievement and the impact of school climate on students' physical and mental health (see review by Thapa et al., 2013), very few studies have

examined the relationships between school climate and the implementation of school mental health interventions.

Gregory et al. (2007) studied the effects of school climate dimensions on the level and rate of change in implementation of a school-based universal violence prevention intervention across three school years. However, they only examined administrative leadership, supportive climate (e.g. respect, taking pride in work) and low negative perceptions of relationships in the school. Their study found that teacher-reported administrative leadership and support between staff and among teachers and students predicted higher average levels of and growth in implementation across 3 years (Gregory et al., 2007). The authors concluded that schools with positive social climate may be more likely to adopt new interventions (Gregory et al., 2007). Wisdom et al. (2014) also reported that positive social climate within an organization is positively associated with innovation adoption.

The multi-level conceptual framework developed by Domitrovich et al. (2008) brings attention to macro-, school-, and individual factors that could influence the implementation quality of school-based preventive interventions. In addition to school climate and organizational health, Domitrovich et al. (2008) also identified the following school-level factors in their model: mission-policy alignment, decision structure, resources, personnel expertise, administrative leadership, school culture, school characteristics (e.g., enrollment size, absenteeism, suspensions and expulsions), and classroom climate (Domitrovich et al., 2008). These factors could potentially influence the adoption of preventive school mental health interventions.

The objective of this study was to determine which school-level factors were associated with the adoption of Relax, be Aware, and do a Personal Rating (RAP Club)—a trauma-informed universal mental health intervention—as part of participation in an ongoing randomized controlled trial (RCT) being delivered in a large urban school district. This study extends existing literature by using a combination of staff-reported dimensions of administrative leadership and school climate (e.g., environment, relationships/engagement, safety, teaching and learning), as well as administrative data of other school-level characteristics (e.g., absenteeism, suspensions and expulsions) that could have potentially influenced adoption of RAP Club. The school-level factors examined in this study were primarily derived from the framework developed by Domitrovich et al. (2008). Furthermore, this is the first study to create scales measuring constructs of the school setting using frameworks from the fields of implementation science (Wisdom et al., 2014), education (Thapa et al., 2013), and public health (Domitrovich et al., 2008).

METHODS

Design

This study employed a quantitative cross-sectional design to assess which school-level factors were associated with adoption of a trauma-informed universal mental health intervention as part of school participation in an ongoing RCT in a large urban school district. The RCT is testing the effectiveness of RAP Club compared to Healthy Topics, a general health education program/active control condition delivered by the study team. The RCT research team partners with participating schools for one year, implements RAP Club and Healthy Topics with the help of school staff, and trains school personnel

to continue offering the programs after the study team leaves. Students are randomized to the intervention or active control condition within schools—the intervention and active control are delivered in every participating school. The RCT and current research study were approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

Study Context

This study was conducted in the Baltimore City Public Schools (BCPS) district, which serves approximately 80,000 students from pre-k to 12th grade. BCPS is the 4th largest school district in Maryland (U.S. Department of Education, n.d.). Almost 80% of students are African American, 11% are Hispanic/Latinx, and 8% are white. The school district is in a city with high homicide and poverty rates (U.S. Census, 2017; Madhani, 2018).

RAP Club Intervention

RAP Club is a trauma-informed universal school mental health intervention (Mendelson, Tandon, O'Brennan, Leaf, & Ialongo, 2015). The core RAP Club intervention components include mindfulness strategies to improve emotion regulation skills, cognitive behavioral therapy (CBT) techniques to enhance problem-solving and communication skills, and psychoeducation about the effects of toxic stress and trauma. Mindfulness, CBT, and psychoeducation are all evidence-based strategies for mental health (Shepardson, Funderburk, & Weisberg, 2016). Results from pilot research suggested that participation in RAP Club improved academic and social competence, emotion regulation, discipline, and classroom behavior when compared with regular

school programming (Mendelson et al., 2015). Additional details of the RAP Club intervention are available elsewhere (Mendelson et al., 2015).

RAP Club was designed to be delivered to 8th graders using a universal approach (i.e., without screening individual students for trauma exposure). RAP Club consists of 12 group sessions delivered twice a week to students during the school day. Each intervention session lasts for 45 minutes and, in the RCT, was co-delivered by a trained member of the RAP Club research team and a community member (e.g., local resident, college or graduate student). A school staff member (i.e., social worker, counselor, psychologist, or teacher) selected by the principal of each participating school was trained to deliver RAP Club prior to the start of the school year in order to build the school's capacity to continue using the intervention following the school's one-year participation in the RCT. The selected school staff member helped co-facilitate the 12 intervention sessions during the school year and participated in weekly supervision calls about the delivery of the intervention during implementation of the intervention. School staff members being trained in program delivery received payment for their time spent in intervention training, delivery, and supervision calls. The active control condition, Healthy Topics (e.g., nutrition, physical activity), was implemented in an equivalent fashion as RAP Club.

Population

Schools eligible to participate in the parent RCT included all co-education Baltimore City Public Schools serving general education students with an 8th grade. The RAP Club Senior Research Program Coordinator began approaching schools to participate in the RCT starting in May 2016. Recruitment efforts included emails, phone

calls, and in-person meetings with principals with the goal of enrolling 8 schools per year in the study. Once schools enrolled in the study, families of incoming 8th graders were provided with information about the study and IRB-approved parent permission forms and youth assent forms. Up to 40 students who submitted signed parent permission forms and youth assent forms from each school were enrolled in the study and were randomized within schools to participate in RAP Club or in Healthy Topics, a health education program active control condition delivered by the study team.

A total of 101 schools had an 8th grade during academic year 2015-2016, the initial year of school recruitment for the RCT. Seven schools with an 8th grade that were not eligible to participate in the RAP Club RCT were removed from the analytic sample: three schools for students with disabilities; three alternative schools; and one school for girls only. Two additional schools were removed from the analytic sample due to low staff response rate on the School Survey; the BCPS district suppressed data from schools with staff response rate of less than 30%. Thus, the total analytic sample for this study consisted of 92 schools eligible to adopt RAP Club through participation in the parent RCT.

Data Sources

School-level factors that could potentially be associated with RAP Club adoption, based on the conceptual model for this research and existing literature, were extracted from three publicly available local and state administrative education websites: 1) BCPS (School Survey and grade configurations per school); 2) Maryland Report Card (student enrollment, chronic absences, special education students, students eligible for free and

reduced meals (FARMS), students with limited English proficiency (LEP)); and 3) Maryland Public Schools (student suspensions and expulsions).

BCPS: The BCPS School Survey data and grade configurations per school in the district were obtained from the BCPS website (BCPS, n.d.). School roster data, which included grade configurations for each school, was obtained from the BCPS website and used to determine which schools in the district had an 8th grade during the 2015-2016 school year. The BCPS School Survey is a cross-sectional survey collected once a year from staff, parents, and students in all public schools in the BCPS system. The School Survey measures stakeholder perceptions of the district office, administrative leadership within schools, and school climate (e.g., safety, environment, engagement). Because staff perspectives are most relevant to the decision-making processes involved in the adoption of school mental health interventions, only staff responses were examined in the analysis of the School Survey data. Staff surveys were administered online during the spring, and each staff member at every public school (traditional and charter) in the district received a survey. The average staff response rate for the 2015-2016 School Survey across the 92 schools was 71%.

All questions in the School Survey were closed-ended. Survey item responses used a Likert scale (strongly disagree, disagree, agree, and strongly agree). BCPS collapsed responses into two categories—agree (includes agree and strongly agree) and disagree (includes disagree and strongly disagree)—and calculated a percentage of positive staff responses for each survey question per school in the district. Some questions were reverse coded by BCPS to indicate a positive response. For example, "Students fighting is a problem at this school" was reverse coded to, "Students fighting is

NOT a problem at this school" to calculate the percentage of staff who agreed that students fighting was not a problem at their school.

Maryland Report Card: Other school-level data that could be associated with RAP Club including chronic absenteeism (students who missed more than 20 days of school in a school year), school enrollment size, and other characteristics of the student population (e.g., special education students, students eligible for FARMS, students with LEP) were obtained from the Maryland State Department of Education's "Maryland Report Card" website (Maryland State Department of Education, 2017).

Maryland Public Schools: Discipline data (student suspensions and expulsions)—which could also be associated with adoption—were obtained from the Maryland Public Schools website (Maryland State Department of Education, 2016).

Measures of school-level independent variables

The school district aggregated School Survey questions into dimensions and calculated an average positive satisfaction score for each dimension per school (i.e., proportion of staff with positive satisfaction scores). The ten original dimensions for the staff survey were administration, creativity and the arts, physical environment, learning climate, finding meaning in work, family involvement, school resources, safety, satisfaction with school, and teachers. The theory of the adoption of innovations process (Wisdom et al., 2014), the multi-level conceptual framework of factors that can influence implementation of school-based preventive interventions developed by Domitrovich et al. (2008), and a comprehensive review of school climate research (Thapa et al., 2013) guided the creation of new scales of school-level variables that could be associated with the adoption of RAP Club using individual School Survey questions. The 11 new scales

that were created are as follows: administration-collaborative decision-making structure (5 items; α=0.91); administration-communication (5 items; α=0.94); physical environment (5 items; α=0.67); resources and supplies (7 items; α=0.87); staff engagement (6 items; α=0.79); student engagement (5 items; α=0.76); family engagement (5 items; α=0.87); emotional safety (3 items; α=0.93); physical safety (6 items; α=0.90); safety-rules and norms (4 items; α=0.89); and teaching and learning (11 items; α=0.83) (see Table 4).

School characteristics obtained from the administrative data for each school for academic year (AY) 2015-2016 included enrollment size and the proportion of the following: chronically absent students, suspensions and expulsions, students eligible for free or reduced-price meals, special education students, and students with limited English proficiency. Using the median, all independent variables were categorized as high or low for analysis (Altman & Royston, 2006). The rationale for including attendance and discipline variables is that a large population of chronically absent students and/or high number of suspensions and expulsions are considered to be indicators of a disorganized school and/or school with a large number of at-risk students, which are factors that have been found to influence adoption of school-based interventions based on prior research (Domitrovich et al., 2008; Gottfredson, Jones, & Gore, 2002; Tolan, Gorman-Smith, & Henry, 2004). The other selected variables (e.g., FARMS, special education students, students with LEP) provided additional information about school characteristics that could also potentially influence adoption based on existing literature.

Outcome variable

Adoption of RAP Club as part of participation in a RCT was the outcome of interest for this study, measured as a dichotomous variable. Baltimore City public schools with an 8th grade that delivered RAP Club during the first 3 years of the parent RCT (2016-2019) were considered to be "adopters." Each school that adopted RAP Club participated in the RCT for one academic year. Eligible schools in the district with an 8th grade that did not adopt RAP Club during this timeframe were considered to be "non-adopters." The non-adopters include schools that were contacted and never responded and schools that responded but declined to participate.

Statistical Analyses

Analyses were performed using Stata, version 14 (StataCorp, 2015). Descriptive statistics were used to characterize schools according to the outcome variable of interest: adoption of RAP Club (yes or no). Loess smoothed non-parametric regressions were used to check the multiple logistic regression assumption of a linear relationship between any continuous independent variables and the logit transformation of the dependent variable and to determine if categories needed to be created (Jacoby, 2000). Since loess plots revealed that the relationship was not roughly linear, categories were created based on the median for each of the continuous predictor variables. Fisher's exact tests were used to determine significant bivariate relationships ($p<0.05$). Multiple logistic regression using independent variables that were found to be statistically significant ($p<0.05$) from Fisher's exact tests were used to test the independent effects of predictor variables on adoption of RAP Club. All hypothesis tests were two-sided with a significance level set at 0.05 and confidence intervals at 95% (Olin et al., 2015). Model

fit was assessed with the Hosmer and Lemeshow goodness-of-fit test (Hosmer Jr, Lemeshow, & Sturdivant, 2013).

RESULTS

A total of 92 Baltimore City Public Schools were eligible to adopt RAP Club through participation in the parent RCT. Overall, staff responses to the district's School Survey for AY 2015-2016 were positive (Table 5). The average staff response rate for scales created from the School Survey ranged from approximately 72% to 92%. With respect to perceptions of administrative leadership, 75.4% of staff had positive ratings of collaborative decision-making structure, and 86.8% of staff positively rated their school administration's communication. The remaining 9 scales fall into the following school climate categories: environment (physical and resources/supplies), relationships/engagement (staff, students, and family), safety (emotional, physical, and rules and norms), and teaching and learning. The average proportion of positive staff responses was 72.8% for perceptions of the physical environment and 83.2% for perceptions of resources/supplies. Over 91% of staff had positive perceptions of staff and family engagement, and 84.5% of staff positively rated engagement of students. Emotional safety had the highest average proportion of positive staff ratings in the safety category (86.7%), followed by rules and norms (79%) and physical safety (73%). Approximately 92% of staff highly rated teaching and learning at their school.

School size ranged from 157 to 1,360 students, with a median of approximately 453 students. The median proportion of students eligible for free and reduced meals was 76.1%, 14.6% of students were in special education, and 0% of students had limited English proficiency (mean was 4.6%). A median of 13% of students were chronically

absent during the school year, and approximately 9% of students were suspended or expelled.

Table 6 reports school-level factors by adoption of RAP Club and results from Fisher's exact tests. Significant differences were found between adopters (schools that adopted RAP Club) and non-adopters (schools that did not adopt RAP Club). Compared with non-adopters, a greater proportion of staff at schools that adopted RAP Club reported high ratings for their school administration's collaborative decision-making structure ($p<0.001$) and communication ($p<0.001$); staff engagement ($p<0.05$); student engagement ($p<0.01$); emotional safety ($p<0.001$); physical safety ($p<0.001$); safety rules and norms ($p<0.01$); and teaching and learning ($p<0.05$). A significantly greater proportion of schools that adopted RAP Club had a low percentage of chronically absent students ($p<0.01$) compared with non-adopting schools.

Based on results from the multiple logistic regression analysis (Table 7), only collaborative decision-making from the administrative leadership category was found to be associated with RAP Club adoption ($p<0.05$; CI=2.08-446). The odds of RAP Club adoption was 30.5 times higher among schools with a greater proportion of staff that reported positive ratings of their school administration's collaborative decision structure (75% or above) compared with schools with a lower proportion of staff who reported positive ratings of their school administration's collaborative decision structure (below 75%), holding other school-level variables constant.

DISCUSSION

This study extends the prevention science literature by examining the association between school-level factors (e.g., administrative leadership, school climate, chronic

absences, suspensions and expulsions) and the adoption of RAP Club—a trauma-informed universal school mental health intervention—in a large urban school district. This is the first study to utilize scales created to comprehensively measure various constructs of the school setting based on theoretical and conceptual frameworks from the fields of implementation science (Wisdom et al., 2014), education (Thapa et al., 2013), and public health (Domitrovich et al., 2008). For example, some studies have used school climate scales that measured relationships within the school but did not measure the physical environment or safety (Gregory, 2007). Staff perceptions of collaborative decision-making between administration and staff was the only factor found to be significantly associated with RAP Club adoption when controlling for other school-level characteristics. This finding is consistent with previous research on the relationship between innovation adoption and decision structure. Studies have defined decision structure as the "extent to which power is centralized and roles are formalized and rigid" (Domitrovich et al., 2008; Hoagwood & Johnson, 2003; Owens, R. G., 2004). Studies have shown that a formalized, centralized organizational structure is negatively associated with innovation adoption (Frambach & Schillewaert, 2002; Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Wisdom et al., 2014). Top-down leadership is also negatively associated with adoption (Backer, Liberman, & Kuehnel, 1986; Wisdom et al., 2014).

In the context of schools, a collaborative decision-making structure includes (but is not limited to) staff input into the development of school policies (Domitrovich et al., 2008) and involvement in the school's programmatic and budgetary decisions. Perceived collaborative decision-making between administration and staff within schools suggests

that staff might have input into the decision to adopt new school-based interventions, including school mental health interventions. Domitrovich et al. (2008) posited that involvement of school staff in decision-making decreases resistance to change. This is also important for the implementation phase of interventions, which follows the adoption phase. For example, it has been reported that teachers who have an active role in deciding what intervention to adopt are "more motivated and committed to high-quality program implementation" (Domitrovich et al., 2008; Ringwalt et al., 2003). In other words, when staff help make the decision to adopt an intervention, they might be more likely to commit to delivery of the intervention.

The school climate domains that were examined in this study in relation to adoption of a preventive school mental health intervention were environment (physical and resources/supplies), relationships/engagement (family engagement and relationships within and between staff and students), safety (emotional, physical, and safety rules and norms), and teaching and learning. Although none of the scales within these dimensions were found to be significantly associated with the adoption of RAP Club in this study, Fisher's exact tests revealed that there were significant differences in school climate characteristics between schools that adopted RAP Club and schools that did not adopt RAP Club. Overall, schools that adopted RAP Club appeared to have a more positive school climate than schools that did not adopt RAP Club. The NSCC defines a positive and sustainable school climate as follows (Thapa et al., 2013):

> *"A sustainable, positive school climate fosters youth development and learning necessary for a productive, contributive, and satisfying life in a democratic society. This climate includes norms, values, and expectations that support people feeling socially, emotionally and physically safe. People are engaged and respected. Students, families and educators work together to develop, live, and contribute to a shared school vision. Educators model and nurture an attitude*

that emphasizes the benefits of, and satisfaction from, learning. Each person contributes to the operations of the school as well as the care of the physical environment."

Schools that adopted RAP Club had a significantly greater proportion of staff that highly rated their school's relationships and engagement for staff and students, safety (emotional, physical, and rules and norms), and teaching and learning. This suggests that these schools already had a positive school climate prior to adopting RAP Club, which is an example of the "Matthew effect" in which "advantage may build on advantage" (Gregory & Weinstein, 2004; Gregory et al., 2007; Mermin, 2005; Perc, 2014). Unfortunately, the schools with indicators of "less well functioning school climates" that did not adopt RAP Club might have been in more need of the intervention compared with the schools with positive school climate indicators that did adopt RAP Club. Further qualitative and mixed methods research is needed to determine why schools did not adopt RAP Club. It is possible that they either might have already had preventive mental health programs in place or lacked the organizational capacity to adopt RAP Club.

To reduce disparities and maximize student academic and mental health outcomes, it is important to understand why schools that could benefit from preventive mental health interventions choose not to adopt these interventions. Future studies should assess the provision of mental health programs and services in schools that do not have positive school climate indicators. For example, resource mapping could be conducted to determine what types of mental health programs and services are already being offered in these schools. It is also important to find out if schools that do not have positive school climate indicators are under-resourced, or over-resourced with too many programs. Researchers, education agency leaders (e.g., State Board of Education, district

administrators), and school administrators should devise solutions to improve school climate to be more receptive to school mental health interventions, especially in schools with challenging environments that have students who could benefit from preventive mental health interventions.

Results from this study suggest that implementation strategies to increase the adoption of preventive school mental health interventions should focus on getting buy-in and support from both school administration and staff who might be involved in intervention delivery. Although the principal is the top leader and primary decision-maker in schools, principals do not typically make school programming decisions alone. In schools with a collaborative decision-making structure, staff can provide input and influence the administration's adoption decision. Recruitment materials describing preventive mental health interventions should be designed so as to appeal to both administrators and staff in schools. For example, the potential positive impact of a preventive mental health intervention on student achievement might be most important to emphasize for principals, while providing ongoing training and support during the intervention might be most important to staff who would be involved in intervention delivery.

Implications

Findings from this study have important implications for school mental health practice and policy. First, school administrators should consider involving staff members in the decision-making process to adopt preventive mental health interventions, especially since staff members (not administrators) are often involved in implementation of these interventions. They could also provide important insight on how an intervention

could potentially impact student outcomes since they work directly with students daily. If involved in the decision-making process, staff members might be less resistant and more willing to actively participate in implementing interventions with fidelity, which could increase the outcomes of the intervention.

Second, school administrators should consider adopting preventive mental health interventions to improve school climate or maintain positive school climate. RAP Club and other universal interventions tend to focus on building social and emotional skills, effective communication and problem solving skills, conflict resolution and positive behaviors among students. These constructs are directly relevant to school climate dimensions of safety and relationships/engagement.

Last, when scaling up preventive mental health interventions delivered as part of a research study, school district leadership should consider starting with schools that have positive school climate indicators. Based on findings from this study, schools with positive school climate might be more likely to adopt and commit to high-quality delivery of these interventions. These schools could also serve as district champions for preventive school mental health programming.

Limitations

The small, fixed sample size in this study limited precision of the multiple logistic regression analysis. However, since there were roughly 10 observations per variable in the final model, there was enough power to detect statistical significance (Sperandei, 2014). Future studies using a larger sample size could be used to test the relationship between school climate and adoption of preventive school mental health interventions.

Another limitation is that the median was used to dichotomize continuous quantitative independent variables (Altman & Royston, 2006). This is not an ideal approach because it could reduce statistical power to detect a relationship between the independent variables and the outcome (Altman & Royston, 2006). However, there was no specific cutpoint identified for these variables in prior studies, and there was not a linear relationship between the continuous independent variables and the outcome of adoption. A common approach is to take the sample median in the absence of a prior cutpoint (Altman & Royston, 2006). Future studies could use more sophisticated statistical methods to determine an approach that would yield more precise regression results. Regardless of the aforementioned limitations, this study provided a deeper understanding of school-level factors that were associated with the adoption of RAP Club in Baltimore City public schools through the use of administrative data and scales derived from survey questions that measured staff perceptions of administrative leadership, school climate, and other dimensions of the school setting.

Conclusion

This is the first study to use conceptual frameworks from implementation science, education, and public health to identify school-level factors associated with the adoption of a trauma-informed universal mental health intervention in a large urban school district. Results indicated that having a collaborative decision-making structure was significantly associated with intervention adoption. Although not statistically significant, findings also suggest that schools with positive school climate characteristics might be more likely to adopt preventive school mental health interventions. Understanding these factors could lead to the development of implementation strategies to increase the adoption of these

interventions—especially in under-resourced schools and schools with a large population of students of color who might be disproportionately exposed to trauma and/or lack access to preventive mental health services.

Table 4: Items of the Baltimore City Public Schools 2015-2016 School Survey for Staff and Alpha Coefficients

Domain	Scale	Survey Item	Cronbach's Alpha coefficient
Administrative Leadership	Collaborative decision structure	The school administration promptly responds to my concerns	0.91
		Feedback from the community influences the administrations' decision-making	
		I have the opportunity to provide input into the school's programmatic decisions	
		I have the opportunity to provide input into the school's budgetary decisions.	
		Collaboration among school staff is valued in this school	
	Communication	The school mission is clearly communicated	0.94
		The school administration supports the staff in performing their duties	
		Staff members know what is expected of them	
		The school administration provides teachers actionable feedback on their instructional practices	
		I feel valued by the administration at this school.	
School Climate Categories			
Institutional Environment	Physical Environment	The school building is clean and well maintained	0.67
		Students have satisfying food options at this school	
		This school is well lit	
		It is often too hot at this school	
		It is often too cold at this school	
	Resources and supplies	This school has programs that address conflict and violence among students	0.87
		This school has an effective Student Support Team	
		This school has programs to support students' emotional and social development	

		This school has programs/services to help students with suspected learning problems	
		Teachers provide extra academic help to students who need it	
		I have adequate supplies to do my job.	
		There is sufficient school-based professional development for staff regarding classroom behavior management practices	
Relationships/ Engagement	Staff: Staff engagement with school and relationships with other staff	I would recommend this school to others	0.79
		I view my work as contributing to student success in the district	
		I view my work as contributing to my professional growth.	
		I feel like I belong at this school	
		School Staff respect each other	
		The staff are willing to help each other out	
	Students: Student relationships with staff and other students	Students respect each other	0.76
		Students respect school staff	
		Teachers care about their students	
		Teachers feel responsible for their students' social and emotional development	
		School staff respect the students	
	Family: Relationship between school and parents	Parents or guardians are welcome at this school	0.87
		When a student does something good at school, the parents are informed	
		When a student does something bad at school, the parents are informed	
		School staff work closely with parents to meet students' needs	
		This school regularly communicates with parents about how they can help their children learn	
Safety	Emotional safety	I feel safe at this school	0.93
		Students feel safe at this school	
		Students feel safe going to and from school	

	Physical safety	Students are often NOT roaming in the halls during class time at this school	0.90
		Students fighting is NOT a problem at this school	
		Vandalism of school property is NOT a problem at this school	
		Student possession of weapons like knives and guns is NOT a problem at this school	
		Students picking on/bullying other students is NOT a problem at this school	
		Student drug/alcohol use is a problem at this school	
	Rules and norms	If students break rules, there are fair consequences	0.89
		This school has clear expectations for student behavior	
		This school provides an orderly atmosphere for learning	
		Students are rewarded for positive behavior	
Teaching and Learning	Teaching and learning	This school does a good job educating students	0.83
		I like the classes I teach (includes N/A response option for non-teachers)	
		Teachers regularly inform students about lesson objectives (includes N/A response option for non-teachers)	
		Teachers encourage students to take challenging classes (includes N/A response option for non-teachers)	
		I am well organized and prepared	
		Teachers feel responsible for their students' academic success	
		This school prepares students for college or to have a career	
		Students have the chance to participate in music, art, dance, or plays at this school	
		Teachers participate in weekly collaborative planning time at this	

		school (includes N/A response option for non-teachers)	
		There are opportunities for teachers to serve in leadership roles at this school	
		There is sufficient school-based professional development for staff regarding instructional practices	

Table 5: Characteristics of study population, n=92 schools

Summary Statistics

	Mean	SD	Median	Minimum	Maximum
Administrative Leadership					
Collaborative decision structure	75.3	12.6	75.4	39.3	97.3
Communication	85.0	10.5	86.8	54.6	100.0
School Climate: Environment					
Physical	71.5	12.4	72.8	44.3	94.1
Resources/supplies	82.5	9.8	83.2	51.6	98.1
School Climate: Relationships/Engagement					
Staff	90.0	7.6	91.8	63.0	100.0
Students	83.9	11.0	84.5	56.1	100.0
Family	89.8	7.2	91.1	69.4	100.0
School Climate: Safety					
Emotional	82.5	16.5	86.7	26.0	100.0
Physical	70.9	18.5	73.0	29.0	100.0
Rules and norms	77.4	14.8	79.0	40.5	100.0
School Climate: Teaching and Learning					
Teaching and learning	90.0	7.1	91.6	65.0	99.4
School Characteristics					
Enrolled Count	496.5	215.3	452.5	157.0	1360.0
% Students eligible for free and reduced meals	72.2	15.0	76.1	20.5	92.6
% Students with limited English proficiency	4.6	10.0	0.0	0.0	51.6
% Special education students	15.9	6.5	14.6	0.0	30.8
Student Behaviors					
% Chronically absent	17.0	13.6	13.1	0.0	75.6
% Suspended or expelled	11.6	11.0	8.9	0.63	64.4

Table 6: School-level characteristics of n=92 schools with an 8th grade in Baltimore City by RAP Club adoption status

	Non-Adopters (N=72, 78%)		Adopters (N=20, 22%)		Fisher's exact test
Variable	**N**	**%**	**N**	**%**	**p-value***
Administrative Leadership					
Collaborative decision structure	31	43.06	18	90	<0.001
Communication	29	40.28	16	80	<0.001
School Climate: Environment					
Physical	34	47.22	11	55	0.62
Resources	30	45.83	14	70	0.08
School Climate: Relationships/Engagement					
Staff	30	41.67	15	75	<0.05
Students	31	43.06	16	80	<0.01
Family	34	47.22	13	65	0.21
School Climate: Safety					
Emotional	29	40.28	17	85	<0.001
Physical	29	40.28	17	85	<0.001
Rules and norms	30	41.67	16	80	<0.01
School Climate: Teaching and Learning					
Teaching and learning	30	41.67	14	70	<0.05
School Characteristics					
High enrolled count	37	51.39	10	50	1.00
Low % of students eligible for free and reduced meals	32	44.44	14	70	0.08
Low % of students with limited English proficiency	55	76.39	15	75	1.00
Low % of special education students	39	54.17	13	65	0.45
Student Behaviors					
Low % of chronically absent students	29	40.28	16	80	<0.01
Low % of students suspended or expelled	34	47.22	12	60	0.45

*Comparison of school-level characteristics between schools that adopted RAP Club and schools that did not adopt RAP Club

Table 7: Characteristics of n=92 schools with an 8th grade in Baltimore City and association with adoption of RAP Club

	Non-Adopters (N=72, 78%)		Adopters (N=20, 22%)		AOR *	95% Confidence Interval	p-value
Variable	**N**	**%**	**N**	**%**			
Administrative Leadership							
Collaborative decision structure	31	43.06	18	90	30.47	2.08 - 446	<0.05
Communication	29	40.28	16	80	0.74	0.10 - 5.26	0.77
School Climate: Relationships/Engagement							
Staff	30	41.67	15	75	0.16	0.01 - 3.37	0.24
Students	31	43.06	16	80	1.18	0.07 - 18.68	0.91
School Climate: Safety							
Emotional	29	40.28	17	85	0.94	0.10 - 8.68	0.96
Physical	29	40.28	17	85	10.35	0.59 - 182.15	0.11
Rules and norms	30	41.67	16	80	2.31	0.20 - 26.50	0.50
School Climate: Teaching and Learning							
Teaching and learning	30	41.67	14	70	0.17	0.02 - 1.55	0.12
School Characteristics							
Student Behaviors							
Low % of chronically absent students	29	40.28	16	80	4.80	0.80 - 28.71	0.09

*AOR = Adjusted odds ratio

CHAPTER FIVE: MANUSCRIPT THREE
Examining factors that influenced the sustainability of a trauma-informed universal mental health intervention in a large urban school district
Formatted for submission to the Journal of School Health

BACKGROUND: More than two thirds of children are estimated to have experienced at least 1 traumatic event (e.g., abuse, neglect, community or school violence) by age 16. Exposure to childhood trauma is associated with negative academic, health, and social outcomes across the lifespan. School settings hold promise for preventing the harmful effects of trauma. There is scant research, however, about factors that influence sustainability of preventive trauma-informed school mental health interventions.

METHODS: Relax, be Aware, and do a Personal rating (RAP Club) is a trauma-informed universal intervention to prevent negative effects of chronic stress and trauma exposure among upper middle school students in low-income urban school settings. RAP Club is a 12-session, group intervention that utilizes evidence-based strategies including mindfulness, psychoeducation, and cognitive behavioral skills. A qualitative case study design was employed to examine factors that influenced sustainability of RAP Club after its initial implementation as part of a randomized controlled trial. Thirteen schools implemented RAP Club between 2016-2018 as part of the research trial. To determine factors that influenced the sustainability of RAP Club at participating schools, semi-structured interviews were conducted with administrators (n = 9) and school staff members who were trained to deliver the intervention (n = 11) and 141 intervention documents (intervention fidelity logs and supervision call notes) were reviewed.

RESULTS: Although most administrators and staff members found the program to be acceptable, appropriate, and beneficial to their students, none of the 13 schools sustained

RAP Club after initial implementation. Results suggest that primary barriers to sustainability included low self-efficacy of school staff, staffing issues, changes in administrative leadership, conflicts with school schedule and space, lack of funding, and lack of sufficient communication between schools and researchers regarding how to sustain programming.

CONCLUSIONS: Recommendations for increasing the sustainability of RAP Club include developing structured sustainability plans with schools during the adoption or early implementation phase, enhancing training for school staff during the implementation phase, using academic-community partnerships to scale up the intervention during the post-implementation phase, and leveraging funds from private and public sources to secure funding for continuation of the intervention.

Keywords: adolescents; trauma; schools; sustainability; mental health

BACKGROUND

Childhood trauma is a pervasive public health problem. In the United States (U.S.), more than two thirds of children are estimated to have experienced at least 1 traumatic event (e.g., abuse, neglect, community or school violence) by age 16 (Substance Abuse and Mental Health Services Administration & National Child Traumatic Stress Network, 2015). Disparities in childhood trauma exposure and access to mental health services exist in the U.S. by race/ethnicity, socioeconomic status, and geographic location (Larson, Chapman, Spetz, & Brindis, 2017; Slopen et al., 2016). Childhood trauma has been linked with negative outcomes across the lifespan including challenges at school (e.g., learning problems, lower grades); increased involvement with the juvenile and criminal justice systems; increased probability of mental and behavioral disorders; and chronic health conditions (e.g., heart disease, diabetes) (CDC, 2016; SAMSHA, 2015).

Schools hold promise for preventing the harmful effects of trauma. Children under 18 typically spend most of their time in schools, and a range of mental health interventions can be delivered in schools (e.g., prevention programs, group and individual counseling). Public schools help increase access to mental health services for underserved youth (Cummings, Ponce, & Mays, 2010; Eiraldi et al., 2015). Although research has demonstrated the effectiveness of several school mental health interventions—such as the Good Behavior Game, FRIENDS (anxiety-preventive intervention), and Cognitive Behavioral Intervention for Trauma in Schools (CBITS) (Fazel, 2014; Murphy, 2017)— few of these evidenced-based practices (EBPs) have been

successfully implemented or sustained in under-resourced schools—which are schools located in low-income school districts (Eiraldi, 2015).

Sustainability is defined as "the extent to which a newly implemented treatment is maintained or institutionalized within a service setting's ongoing, stable operations" (Proctor et al., 2011). Although there has been little empirical work on the topic of sustainability (Aarons et al., 2011), Nadeem and Ringle (2016) highlighted that implementation science conceptual models have illustrated interdependent, multi-level factors that can impact an organization's ability to sustain EBPs and new promising interventions (e.g., Aarons, Hulbert, & Horwitz, 2011; Domitrovich et al., 2008). The model developed by Aarons and colleagues (i.e., Exploration, Adoption/Preparation, Implementation, Sustainment; 2011) was one of the first to consider the contextual characteristics of the outer (macro-level) and inner (organizational) contexts of public service systems across multiple phases of implementation (Nadeem and Ringle, 2016).

The conceptual framework of multilevel factors that can affect implementation quality of EBPs in schools developed by Domitrovich and colleagues (2008) posits that various interdependent factors at the individual-, school-, and macro-levels can impact the quality with which interventions are implemented in schools. Eiraldi and colleagues (2015) highlighted the importance of this model in relation to both the implementation and sustainment of mental health EBPs in under-resourced schools. Individual-level factors are those that influence individuals (e.g., administrators, social workers, teachers) who have implemented, are implementing, or will implement an intervention in schools (Domitrovich, 2008). Individual-level factors include professional characteristics (e.g., education, training, skills), psychological characteristics (e.g., enthusiasm, self-efficacy,

professional burnout), and intervention perceptions and attitudes (e.g., acceptability, perceived effectiveness). School-level factors recognize the school as an organizational entity that can influence the implementation and sustainability of mental health interventions (Domitrovich, 2008). The school-level factors depicted in the multilevel model by Domitrovich and colleagues (2008) include resources; decision structure; administrative leadership; mission/policy alignment; school and classroom climate; school culture; personnel expertise; and other school characteristics (e.g., school size, absenteeism). Domitrovich and colleagues (2008) described macro-level factors as broad factors beyond the individual and school levels that could impact the implementation of interventions in schools such as policies and financing (e.g., federal, state, and district policies); community-university partnerships (e.g., collaboration between universities and schools to implement and evaluate interventions); and leadership and human capital (e.g., community capacity and empowerment, qualified professionals or individuals from the community that could be trained to help deliver an intervention). Eiraldi and colleagues (2015) noted that these interdependent factors are especially important to consider in the context of implementing and sustaining mental health EBPs in under-resourced schools that have a "unique set of challenges" including the following: mental health teams that are comprised of both school district and community mental health agency employees; staff shortage and high turnover; and fiscal challenges.

Although the continuation or sustainability of programs upon conclusion of a research study has emerged as a growing area of emphasis for prevention researchers in a variety of settings (Friend, Flattum, Simpson, Nederhoff, & Neumark-Sztainer, 2014; Greenhalgh et al., 2004; Nadeem & Ringle, 2016), sustainability of mental health

innovations and EBPs in schools remains largely understudied (Nadeem & Ringle, 2016; Eiraldi et al., 2015; Vona et al., 2018). A recent study specifically identified factors such as organizational consistency, workforce stability, innovation-setting fit, innovation-related issues and shifting priorities as contributors to the failure to sustain CBITS—an evidence-based intervention for students who have been exposed to trauma and exhibit significant symptoms of post-traumatic stress disorder (PTSD)—in a low-income urban school district (Nadeem & Ringle, 2016). However, limited research exists about the factors that influence the sustainability of trauma-informed universal interventions in under-resourced schools following the removal of external resources from an academic research study.

This is the first study to explore how multi-level factors impact the sustainability of a trauma-informed universal intervention in under-resourced urban schools. Specifically, this study explored factors that influenced sustainability of Relax, be Aware, and do a Personal rating (RAP Club), a trauma-informed universal mental health intervention, in a large urban school district after its initial implementation as part of a randomized controlled trial (RCT).

METHODS

This study employed a descriptive qualitative multiple-case study design to determine the individual-, school-, and macro-level factors that impacted the sustainability of RAP Club after implementation in an RCT. Data sources were in-depth interviews with key informants and a systematic review of intervention documents. To allow enough time since the intervention ended to examine sustainability, this study was conducted within 1-2 years after the RAP Club RCT ended at each school.

Study context

This study was conducted in the Baltimore City Public Schools (BCPS) district in Baltimore City, Maryland. BCPS serves approximately 80,000 students of whom 80% are African American, 11% are Hispanic/Latinx, and 8% are white. The school district is located in a city with high homicide and poverty rates (U.S. Census, 2017; Madhani, 2018). The demographic characteristics of students in the 13 schools participating in this study are similar to the district as whole.

Overview of the RAP Club Intervention

RAP Club is a trauma-informed universal school mental health intervention that was adapted from Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS; DeRosa et al., 2006). While SPARCS is focused on *treatment* for stress and trauma among adolescents, RAP Club was adapted over a 3-year period into a trauma-informed universal *prevention* program for upper middle school students in low-income urban settings. RAP Club teaches emotion regulation skills through mindfulness strategies; problem solving and communication skills using cognitive behavioral therapy (CBT) techniques; and psychoeducation about the psychological, physiological, and behavioral effects of stress and trauma. Psychoeducation, mindfulness, and CBT are all evidence-based strategies for enhancing mental health (Shepardson, Funderburk, & Weisberg, 2016). Promising results from pilot research found that participation in RAP Club improved academic and social competence, emotion regulation, discipline, and classroom behavior when compared with regular school programming (Mendelson et al.,

2015). Additional details of the RAP Club intervention are described in previously published research (Mendelson et al., 2015).

Schools have the option to sustain RAP Club after initial implementation of the intervention as part of the RCT. The RCT involves training and supervision in how to implement RAP Club for school personnel—ideally, at least one school mental health professional from each participating school—so that they can continue to offer the program on their own in subsequent years following the school's participation in the trial. One or two school mental health professionals from participating schools (or teachers, if no mental health personnel are available) participate in RAP Club training prior to the start of the school year, help co-facilitate 12 intervention sessions during the fall, and participate in group supervision calls over the course of the six weeks of program delivery. School staff receive financial compensation for participation in these activities.

The RAP Club training is delivered by two SPARCS developers over the course of two days each year of the RCT at the end of the summer. The training includes lectures, interactive activities, brainstorming sessions, and modeling of intervention delivery. School mental health personnel trained to deliver RAP Club receive PowerPoint slides of the training presentations and a RAP Club facilitator manual, which includes the RAP Club intervention curriculum and a copy of the RAP Club student manual. To help facilitate sustainability, schools that participate in the study have the option to send mental health personnel or teachers to attend RAP Club training free of charge in subsequent years of the RCT as a refresher or to expand the number of trained personnel. Participating schools are also offered consultation (e.g., advice and assistance

with implementation challenges) from the RAP Club research team if they choose to continue the intervention.

Participants

Co-education public schools with an 8th grade (n=92) were approached by the RAP Club Senior Research Program Coordinator to participate in the RCT starting in May 2016. Recruitment efforts included emails, phone calls, and in-person meetings with principals with the goal of enrolling 8 schools per year in the study. Once schools enrolled in the study, families of incoming 8th graders were provided with information about the study and IRB-approved parent permission forms and youth assent forms. Up to thirty students who submitted signed parent permission forms and youth assent forms from each school were enrolled in the study and were randomized within schools to participate in RAP Club or in Healthy Topics, a health education program active control condition delivered by the study team.

Thirteen schools implemented RAP Club between 2016-2018 over the course of the first two years of the RCT. The study sample for the current analysis includes school principals who made the initial decision to adopt and implement RAP Club as part of the RCT and school staff members who were trained to deliver RAP Club from 12 of these 13 schools. One principal and one staff member from the same school opted not to participate. Staff members included social workers, guidance counselors, and teachers.

Procedures

Participants for this study were recruited via email, phone, and in-person visits to schools after implementation of RAP Club to participate in key informant interviews

about factors that influenced sustainability of the intervention. Administrators and staff members provided oral consent and received $15 for their participation.

Intervention documents (fidelity logs and supervision call notes) were reviewed by the first author. *Intervention fidelity logs* were completed after each intervention session by the group co-facilitators (i.e., mental health clinicians from the research team and community members). Following a series of quantitative ratings regarding curriculum coverage, the logs posed three qualitative questions asking group leaders to describe the most successful part of each session, the most challenging part of each session, and topics that would be helpful to discuss in supervision.

Supervision call notes. Group facilitators from the research team, community member co-facilitators, and school staff members in training participated in supervision calls led by the Senior Research Program Coordinator or principal investigator. During the supervision calls, group leaders and school staff were asked to discuss student attendance and engagement, teacher presence in the room during intervention delivery, and the most successful and challenging aspects of the most recent intervention session. The supervisors took notes to document the key content of the calls.

Instruments

Semi-structured interview guides for administrators and staff members were initially developed by the study principal investigator and co-investigators, and later expanded by the first author to gain a deeper insight into factors that could have influenced sustainability of RAP Club. The expanded interview guides were designed to investigate the factors that impacted sustainability of RAP Club based on the individual-,

school-, and macro-level domains depicted in the multilevel framework developed by Domitrovich and colleagues (2008). For example, at the individual level, interview guides predominantly asked administrators and staff members questions about their perceptions of and attitudes about the intervention (e.g., What is your understanding of the main purpose of RAP Club? How helpful was the program for the students?). The primary interview questions of interest at the school level were, "What are some reasons why you would or would not want the program to continue? What factors are related to whether your school continues to offer the program? What would facilitate this?" Other interview guide questions relevant to the school level probed on mission/policy alignment, decision structure and administrative leadership, resources, personnel expertise, and school climate. At the macro level, interview guide questions focused primarily on policies and financing (e.g., To what extent do you feel that the school district is prioritizing trauma exposure and other mental health concerns among students?) and university/community partnerships (e.g., What is your opinion about the benefits and challenges of partnering with a university to deliver a program like RAP Club that is part of an academic research study?).

Data Analysis

Data were analyzed by the first author using Yin's 5 phases of qualitative data analysis (Yin, 2011). Atlas.ti, a qualitative data management software program (Hwang, 2008), was used for the management and coding of qualitative data from the interview transcripts and intervention documents (e.g., intervention fidelity logs, supervision call notes). Preliminary codes for interview transcripts were derived from the interview

guides and a few interview transcripts using an inductive approach. Preliminary codes for intervention documents were derived from questions asked in fidelity logs and supervision call notes using an inductive approach. The initial list of codes was refined and applied to the text of the remaining documents; additional codes were added as needed as the study progressed. Codes that were applied to the data were clustered into substantive categories, and the category codes were compared across data from interview transcripts and intervention documents (Bowen, 2009). The constant comparative method was used to identify patterns and discover theoretical properties in the data (Bowen, 2009; Glaser & Strauss, 1967). Similarities, differences, and general patterns were identified across interview transcripts and intervention documents within and between schools. Themes that emerged from the data were organized into categories based on the conceptual framework developed by Domitrovich and colleagues (2008). Data source triangulation and debriefing between authors were used to enhance the trustworthiness of the data and findings (Baxter & Jack, 2008; Creswell, 2007; Denzin, 1989; Merriam, 1998).

RESULTS

A total of 20 administrators and school staff members from the 13 schools that implemented RAP Club participated in this study (Table 8). Of the 9 administrators (n = 7 principals; n=1 interim principal; n=1 vice principal), 6 were women and 3 were men. Of the 11 staff members, 9 were women and 2 were men. At least one key informant interview was conducted at 12 of the 13 participating schools. No interviews were conducted at one school; however, the principal sent email responses about sustainability to the first author in lieu of being formally interviewed. The staff member at that same

school who was trained to deliver RAP Club did not respond to any recruitment attempts. Of the 12 remaining schools, interviews were conducted with *both* the principal and staff member at 6 schools and *either* the principal or staff member at 6 schools. Interviews were conducted in-person at participating schools and over the phone when preferred by the participant (n=10). The average interview length was 30-45 minutes.

A total of 141 intervention documents were analyzed. Intervention fidelity logs were available for 90% of the intended dose of 12 intervention sessions per school across both cohorts (n=137 of 156). Supervision call notes were not archived for cohort 1, but the Senior Research Program Coordinator wrote and archived supervision notes for cohort 2 (n=4).

Although most administrators and staff members found the program to be acceptable, appropriate, and beneficial to their students, none of the 13 schools sustained RAP Club after initial implementation in a RCT. Individual-, school-, and macro-level factors that influenced sustainability of RAP Club are described in detail below (see Table 9 for a summary of these factors).

Individual-Level Factors

Data revealed perceptions of and attitudes about the RAP Club intervention (e.g., acceptability, perceived need to offer the program to students, and perceived effectiveness of program) and psychological characteristics as individual-level factors that are important for sustainability of RAP Club.

<u>Acceptability</u>

Nearly all the administrators and school staff members who were trained to deliver the RAP Club intervention that were interviewed for this study found the program to be acceptable and appropriate for their students. These administrators and staff stated an openness or explicit desire to offer the program again at their school based on the perception that the intervention is a useful strategy for addressing problems faced by their students and/or perceived effectiveness of the intervention. A demonstrative quote from a staff member that is reflective of this theme below:

> *"The information that they can gain from the program is much needed, especially the population we deal with. It is quite useful for them to have that knowledge, which is why I would say, yes, I would want to have [RAP Club] at this school. I would want to use it [again]." (Staff member, School 5)*

Perceived need to offer the program to students

Most staff members in this study who were trained to deliver RAP Club expressed the need to sustain the intervention. Some described the limited expertise and/or ability within the school to cover topics that were addressed in the intervention. Others mentioned that the program was needed to teach students communication and problem solving skills, coping mechanisms to deal with trauma, and management of stress and anger. An example of a quote that demonstrates the reported perceived need by a respondent to continue offering RAP Club is below:

> *"I loved the groups. I loved the group sessions that the kids had. We need it, because there's just so many things working against them—[like] social media. They're turning to the wrong sources for answers, you know?...So, I definitely want it, because my kids just need that constant reinforcement on what to do and how to handle issues and problems, and it's not to revert to violence." (Principal, School 8)*

Perceived effectiveness of program:

Several administrators and staff members interviewed for this study mentioned program benefits and effectiveness as factors that influence sustainability of RAP Club. Some principals expressed interest in sustaining RAP Club based on their perception that the program was beneficial for their students. An example of one principal's desire to sustain RAP Club based on their perception that the intervention is beneficial to students is below:

> *"We have students with needs, and we are unable to cover all of the topics and meet the needs of the children, So that's why I would still have [RAP Club] in the schools. I would still want it in the schools. It's just a benefit to the students, and the more they're exposed to it, the better coping [skills] and the better choices they'll be able to make in the future." (Principal, School 4)*

Some staff stated that their principal would be more likely to sustain the program if it is found to benefit students. Others mentioned that before deciding to sustain the program their principal would likely ask them if they felt that the program was beneficial to students based on their experience working with the program. Many staff members who were trained to deliver the intervention, observed the modeling of the program by research staff, and participated in implementation of the intervention said that they felt the program was useful and beneficial to students. When asked if RAP Club should be continued, one staff member said the following:

> *"Yes, I would [like to continue offering RAP Club] Because I feel like when I'm comparing the students that participated in RAP [Club] with the students who did not, I feel l like they are able to better adapt to the craziness. They're middle schoolers so sometimes things can always go awry, but I feel like they have learned some sort of way to deal with it." (Staff member, School 3)*

However, not everyone had favorable opinions of RAP Club's effectiveness. For example, one staff member said, *"I don't think as a school we found it to be particularly effective, and we got a lot of pushback from kids about missing their classes… I don't*

know that we would've gotten the support [to continue] even if I would've championed it" (Staff member, School 10).

A couple of administrators and staff at the same school had different perceptions of RAP Club's effectiveness. For example, the staff member at School 2 that worked with RAP Club felt the program was beneficial and said:

> *"[RAP Club] didn't reach everybody the same exact way. Every kid that was in that program, there's something that I can go to from that program and use to have some kind of dialogue with them in situations, some kind of communication...something that we can both go and relate to from that program that we had. I absolutely liked the program."*

However, the principal of School 2 felt that the program would be more beneficial if it were longer:

> *"I believe that the program could be valuable. I definitely question the duration of the program. I question whether or not it was long enough. It would be much more beneficial if it was a semester-long program, beginning when school starts, or when the semester starts and when it ends, which is approximately 90 days."*

Psychological characteristics

Low self-efficacy and concerns about professional burnout were the main psychological characteristics that emerged from administrator and staff interviews as important influencers of sustainability. For example, a couple staff members that were trained to deliver RAP Club did not seem to be confident about their ability to deliver the program on their own without the support of the research team. For example, one staff member mentioned, *"I would have liked to continue it, but I don't feel like I know enough about it" (Staff member, School 3).* The level of participation in RAP Club delivery varied across schools. While some staff members were very engaged in program

delivery, others were not which could have influenced their knowledge and level of comfort with delivering the intervention on their own after the research study ended. A quote from a staff member reflects this theme: *"I don't feel like we really led anything because, like we said, they were here consistently every session and so we just supported with behavior stuff which wasn't much" (Staff member, School 4).*

Supervision calls were supposed to serve as ongoing training and a support system for school staff during the intervention. No school staff members participated in more than four calls. Based on the information reflected in the notes, the supervision calls were predominantly focused on attendance, student engagement, and successes and challenges of the most recent session. There was no evidence that the calls were consistently used for ongoing training on how to deliver intervention curriculum.

Concerns about professional burnout were mentioned by a couple administrators and staff members. When discussing reasons why RAP Club did not continue after the research study ended, one administrator stated that *"our teachers are sometimes—very, very, very occupied. They have so much on their plates, so we don't want to have additional burden or—work on [them]" (Vice principal, School 9).* A staff member from a different school also expressed concerns about professional burnout when explaining why RAP Club did not continue at her school:

> *"I know the way that the system worked was kind of like a train-the-trainer model where there wouldn't have been the support from the program, and it would've been complicated to have enough staff members be able to—we're stretched very thin, and to be able to say 'We need people to do this without compensation on top of your job' is a big ask, specifically if you're asking for a teacher. I can run a group as a part of my job and not feel as put out, but to say to a teacher 'Give me your planning period' I think would never work." (Staff member, School 10)*

School-Level Factors

Several school-level factors were described as barriers to sustainability of RAP Club in participating schools, including administrative leadership and decision structure, personnel expertise and staffing issues, and resources required to deliver the intervention (i.e., conflicts with space and scheduling challenges).

Administrative leadership and decision structure

An administration change was described by a staff member from one school as a barrier to sustaining RAP Club. For other schools, having buy-in and support within the school from administrators and staff members emerged as a common theme. Many staff members expressed that a primary factor that influences sustainability of RAP Club is whether the principal and/or other school administrators want to sustain the program. While a couple staff members mentioned that their principal would likely ask for their input in determining whether to sustain RAP Club, others stated that the decision would be left up to the principal and/or other school administrators. An example of a quote that demonstrates this theme is below:

> *"That wouldn't be my decision. That would be the decision of the principal…That's probably the big thing. If she decides if she wants to do it. She'll probably ask if I think it's beneficial. I'll give her my feedback on how I think it'll work. How it will be beneficial, but that's how that will be determined." (Staff member, School 1)*

Personnel expertise and staffing issues

Administrators mentioned that they would like to offer the program to more students; however, additional staff would have to be trained to make this happen. As part of the RAP Club RCT, only one staff member at each participating school was trained to deliver the intervention, except for one school in which two staff members were trained.

Because few staff were trained to deliver RAP Club from each school, staffing issues such as staff turnover and shortage were mentioned as barriers to sustaining RAP Club. At a couple schools, staff that were trained left the school or moved into a different position, which precluded them from delivering RAP Club. The principal who declined a formal interview but sent email responses about sustainability said that RAP Club did not continue at her school because of an unexpected shift in staff and the social worker that was trained to deliver RAP Club resigned from her position. Another principal said that one of the reasons why RAP Club did not continue at her school was because, *"My Director of Culture and Climate who was the main facilitator of the program moved into another leadership position so she's no longer at the school and one of the teachers who [worked with RAP Club] is no longer at the school" (Principal, School 7).*

When asked about factors that influence sustainability of RAP Club, one vice principal said, *"I would say it depends on interest, especially because we need to have staffing. The staffing is always difficult. As I said, our teachers are really, really, really--they have a lot on their plates, so staffing is the problem" (Vice Principal, School 9).* A staff member said:

> *"If you're talking about school based staff facilitating [RAP Club], certainly, staffing issues would be a concern. My position is part assigned and part purchased. It's difficult to implement extra things if I'm not here full time, which currently I'm not." (Staff Member #2, School 4)*

Resources: Space conflicts

Across the schools, RAP Club was held in different locations including the library, music room, classrooms of teachers that had planning periods during the time of the intervention, or a room that was wasn't being used for any other purpose. Some

administrators and staff described conflicts with space in the school to deliver the intervention as a barrier to sustaining the program. Issues with space included not having enough space to accommodate extra programs and difficulty securing space to store intervention materials.

Issues with space were recorded in the fidelity logs and supervision notes most frequently by research staff from one school (School 13). Instead of the intervention being delivered in a private room with a closed door, research staff noted that the intervention was initially delivered in an open classroom area in which other classes that were in session could be heard and that it was very distracting for students in RAP Club. Group leaders decided to deliver RAP Club outside the building for a couple sessions due the distracting noises and lack of privacy in the open classroom space. No administrators or staff from this school were formally interviewed about sustainability. Space was not mentioned in the email response about sustainability from the principal of this particular school to this paper's first author, but findings from the fidelity logs suggest that the school might not have had adequate space to continue offering the program.

Resources: Scheduling conflicts

Almost all administrators and staff members described issues with time as a barrier to sustainability of RAP Club. Time-related issues were the school-level factor most frequently recorded by research staff in the intervention documents as a challenge during implementation; it was noted over 40 times by research staff from 11 out of the 13 schools. The primary scheduling problems described by administrators, school staff, and research staff were difficulty fitting RAP Club into the regular school schedule and scheduling conflicts with teachers' planning periods and/or students' resource time.

Administrators and staff members in this study mentioned that these scheduling difficulties contributed to the program not continuing in their school.

For some schools with complex schedules (e.g., schools with a lot of programming, combined elementary/middle schools that had separate schedules for elementary and middle school students), some administrators and staff members expressed that scheduling RAP Club around other school activities during the intervention was difficult. For example, one principal said that RAP Club was not sustained because, *"new curriculum requirements and time increase demands erased all the time that we were able to find in the past" (School 13).*

Another potential barrier to sustaining RAP Club was the scheduling conflict between RAP Club and some teachers' planning period. For some schools that had social workers or guidance counselors trained to deliver RAP Club, the teachers' planning period was not described as an issue. For schools that had a teacher trained to deliver RAP Club, some teachers were in their classroom while the program was being delivered but did not actively participate in the delivery of RAP Club because it conflicted with their planning period as described in the example below:

> *"Generally, what I did was because they had actually had a time scheduled for during my planning time, I really didn't participate in the program itself. I know it was designed that way, but it kind of conflicted with my schedule in the school." (Staff Member, School 3)*

Most administrators in this study said that RAP Club fit into the school schedule well by having it delivered during "resource time," which is typically the time of day when students are allowed to take "non-academic" courses such as gym, music, art, etc. If sustained, RAP Club could be potentially offered as a resource class for 8th graders.

Resource time varies by school but is usually held for 45 minutes or 1 hour during the school day. For one school, the principal reported a positive experience with offering RAP Club during resource time, but the staff member at the same school who was trained to deliver the program reported student attendance issues. These conflicting perspectives are described by the following quotes:

> *"It was difficult at first, making everything fit. I ideally wanted after school, but we fit it in during their SPAR classes, and that worked out well. That's their art, music, those time periods. So, it worked out because the kids were actively engaged, and they enjoyed it. I think if they didn't enjoy it, we would have a hard time getting them to go." (Principal, School 8)*

> *"I think it was delivered okay. I mean, it was on resource [time], so we did have some students sometimes they wanted to come. Sometimes they didn't, and, again, if something else was going on that was more interesting, they wouldn't come." (Staff Member, School 8)*

Over half of the staff members mentioned that having RAP during their school's resource time contributed to attendance issues, students resisting to actively participate in RAP, and students dropping out of RAP Club. Not all staff reported a problem with RAP Club being offered during resource time. For example, one staff member reported that students at her school preferred being in RAP Club instead of their resource class*: "That said a lot because our kids actually missed their resource time, their time for music or art or gym. That's pretty much saying a lot. That's one of the times they can relax during the day that they would prefer to be in the Rap Club program." (Staff member, School 3)*

Some of the participants described issues with both time and space. An example of how issues with the school schedule and available space impacted sustainability is below:

> *"We have a very complex schedule here, very complicated programs here already. So we don't want a program to become a burden for us, so it's very important for the programs to fit seamlessly into what we're doing daily, and if that happens, okay….because this is a school that is basically five schools—in one*

school. Last year we have many issues with space…As I said, really love to have something that can give an enrichment to the students, but fit within what we doing with our schedule, within our timeframe." (Vice Principal, School 9)

Macro-Level Factors

The main macro-level factors that were relevant to sustainability of RAP Club across schools were policies and financing, and community-university partnerships.

Policies and financing

Several administrators mentioned that the school district does not currently provide training and funding to *all* schools for programs that address trauma and promote mental health. Sustaining RAP Club would be aligned with the district's child wholeness policies, yet some administrators and staff mentioned that funding would be a barrier to sustainability. For example, when asked about factors that influence sustainability of RAP Club, a staff member from School 8 said, *"The main thing would most likely be funding."* The district provides each school with at least one social worker and/or one school psychologist based on the proportion of students that are in special education and/or have requirements for mental health services in their individual education plan. Programs like RAP Club require funding from the school's budget—which is controlled by the principal—or an outside partnership. If sustained, administrators would have to decide to include RAP Club in the budget for the following year or secure funding from other sources.

Community-university partnerships:

During the intervention, the university research partner provided staff (mental health clinician and community member) to co-deliver RAP Club, intervention materials, incentives for students that participated in RAP Club (e.g., snacks and prizes), training

and stipends for staff members that worked with the intervention, and supervision calls to serve as ongoing support to staff at participating schools throughout the implementation phase. Once the intervention ended, the schools did not have the same level of support—outside staff, incentives, and stipends were no longer provided. Schools did receive some support such as being allowed to continue using the intervention materials after the research study ended, sending the same or a different staff member to RAP Club training before starting the following school year, participating in additional supervision calls, and having a study team member available for consultation while delivering RAP Club on their own after initial implementation. However, interviews with administrators and staff members at participating schools demonstrated various levels of understanding of these post-study options for sustainability. Some administrators and staff members did not understand that they could continue delivering RAP Club without involvement from the research team after the study ended. For example, one staff member thought their school was prohibited from using the intervention materials: *"Well, we were told that we could not use it…We just didn't have permission to use it at this time outside of the group" (Staff Member, School 5)*. Another staff member said, *"I wasn't very clear on what was happening afterwards. So I didn't know that sustaining [RAP Club] was even an option" (Staff member, School 11).* Another staff member was aware that their school had the option to sustain and said, *"I knew there was that option [to sustain RAP Club], but I just wasn't sure that my principal was clear" (Staff member, School 3)*. Some participants described expectations of being contacted by the research team after the study ended. When asked why RAP Club did not continue at their school, one administrator said, *"I don't know…we never got contacted" (Vice Principal, School 9)*. Another staff member

also noted this lack of contact and said, *"We weren't contacted to continue it…I do think that if we had been contacted to, you know, do it again, I'm sure we would have" (Staff member, School 12).*

DISCUSSION

It has been well-established that exposure to chronic stress and trauma during childhood can potentially impact students' academic and mental health outcomes (e.g., (Covey, Menard, & Franzese, 2013; Currie & Spatz Widom, 2010; Macmillan & Hagan, 2004; Metzler et al., 2017; Nadeem & Ringle, 2016; Zinzow et al., 2009). Given the promise of school mental health preventive interventions to prevent the harmful effects of trauma exposure and improve academic outcomes, it is critical to successfully implement and sustain these interventions to increase the likelihood of positive socioeconomic, health, and social outcomes across the lifespan. Existing studies on sustainability of school mental health interventions are largely focused on teachers, school mental health clinicians, and/or district-level administrators (Nadeem & Ringle, 2016). This is one of the few studies to provide perspectives from diverse school positions including administrators (principals, interim and vice principals), guidance counselors, school social workers, and teachers (Vona et al., 2018).

To bridge the research-to-practice gap, it is important to study barriers to sustaining promising interventions after research participation in schools across various levels and from different perspectives (e.g., administrative leadership, school staff, research staff) (Friend et al., 2014). Although most administrators and staff members at participating schools in this research found the intervention to be acceptable, appropriate,

and beneficial to their students, none of the 13 schools continued the intervention after the research study ended.

At the individual-level, the main barriers to sustainability were low self-efficacy among some staff that were trained to deliver the intervention and lack of perceived effectiveness of the intervention among a couple administrators and school staff members. Overall, the primary barriers to sustainability were at the school- (e.g., changes in administrative leadership, staffing issues, challenges with school schedule and space) and macro-levels (e.g., lack of funding, lack of sufficient communication between schools and researchers regarding how to sustain programming). These findings are consistent with previous research and are discussed below.

Findings from this study indicate that administrators are the key decisionmakers when it comes to sustaining school-based interventions, regardless of whether they are actively involved in implementation of the intervention. However, some administrators involve staff members that are directly involved in intervention delivery in the decision-making process. Some administrators in this study felt that not having the buy-in and support from staff might be a barrier to sustainability, while some staff felt that not having the buy-in and support from administrators could be a barrier. Previous studies have emphasized that buy-in and support from both administrators and staff involved in implementing school-based interventions are necessary for sustainability (Domitrovich et al., 2008; Forman, Olin, Hoagwood, Crowe, & Saka, 2009; Friend et al., 2014; Han & Weiss, 2005; Tibbits, Bumbarger, Kyler, & Perkins, 2010).

Although all staff that were interviewed for this study were trained to deliver RAP Club, some of them did not express confidence in their ability to deliver the intervention

on their own without support from the research team. Self-efficacy of school staff (mostly teachers) to deliver health programs in schools has been shown to be an important factor for sustainability of the programs (Domitrovich et al., 2008; Eiraldi et al., 2015; Friend et al., 2014; Han & Weiss, 2005; Lytle, Ward, Nader, Pedersen, & Williston, 2003). These results indicate the importance of providing training and support to school staff to promote self-efficacy among school staff to deliver school mental health interventions upon conclusion of formal research support (Eiraldi et al., 2015; Forman et al., 2009; Friend et al., 2014; Han & Weiss, 2005; Owens, J. et al., 2014). An examination of RAP Club intervention documents revealed low participation of school staff in calls that were supposed to serve as ongoing training and support during the implementation phase. To increase participation of school staff in ongoing training, it might be beneficial to provide multiple ways for staff to engage staff in ongoing training opportunities (e.g., phone calls, online videos and modules).

Findings from this study indicate that staffing issues (e.g., turnover, shortage, etc.) are a major barrier to sustainability of mental health interventions in schools. Other studies have also reported staff turnover as a barrier to sustainability of health programs in schools (Friend et al., 2014; Eiraldi et al., 2015; Forman et al., 2009; Owens et al., 2014). One recommendation to address staffing is to train school staff that were assigned to the control group at the same school during the RCT to deliver the desired intervention. This is supported by Friend and colleagues (2014) who recommended that, "research studies include both a training component and intervention materials for control conditions following study completion." Another recommendation to address staff turnover is to provide additional training opportunities to schools for additional school

staff members that were not trained during the pre-implementation phase during and after the research study ends including online training modules, access to videos of intervention sessions being successfully delivered, and booster trainings with research staff in-person or over the phone (Friend et al., 2014). Schools might also want to consider alternative staffing options such as training student leaders in their school to help deliver the intervention.

Conflicts with school schedule and space emerged as major barriers to sustainability of RAP Club. This is consistent with studies examining sustainability of health programs in schools, including those focused on mental health (Han and Weiss, 2005; Owens et al., 2014; Eiraldi et al., 2015, Nadeem and Ringle, 2016). A recommendation to address this issue is to designate someone from the research team to work closely with a school administrator and/or staff member before implementation of the intervention to discuss the school calendar, daily schedule, and potential location(s) where the intervention will be delivered to avoid issues with the school calendar, schedule and space. This administrator or staff member could also be instrumental in working with the research team to adapt the intervention to fit seamlessly into the school schedule after the research study ends. Methods of communication during the pre- and post-implementation phases could include brief surveys (e.g., 3-5 questions), in-person meetings (30 minutes – 1 hour), and/or phone calls depending on the availability of school staff members.

Intervention documents provided additional evidence about implementation-related factors that negatively impacted sustainability of RAP Club that were also discussed in the interviews (e.g., conflicts with school schedule and space). Intervention

documents also provided information to help explain some of the information gained from interviews. For example, some staff mentioned not feeling confident to deliver the intervention on their own, but these same staff members did not fully take advantage of the available support system as was demonstrated by low staff attendance on supervision calls and low engagement in intervention sessions. Perspectives from research team members about potential barriers to sustainability were gathered from the intervention documents. Friend and colleagues (2014) noted that it is important to gather data from persons in different roles when studying the sustainability of programs implemented and evaluated within research studies (Wiltsey Stirman et al., 2012)

Overall, findings from this study highlight the importance of developing structured sustainability plans with schools in the adoption or early implementation phase to increase the likelihood of sustainability after participation in a research study (Nadeem & Ringle, 2016; Owens et al., 2014). Sustainability plans developed by researchers and partner schools could help facilitate sustainability by identifying potential sources of funding to pay for future implementation-related costs, and would address the issue of insufficient communication between schools and researchers regarding how to sustain programming.

Limitations

This study adds to existing literature by examining sustainability of a trauma-informed universal intervention in under-resourced urban schools. This study is limited by the sample, since not all administrators and staff members that were trained to deliver RAP Club were able to be interviewed. Cohort 1 had representation from both the

principal and staff member(s) that were trained to deliver RAP Club at all schools except for one school in which the staff member that was trained to deliver RAP Club was interviewed but the principal was unable to be interviewed. Only one school from cohort 2 had representation from both the principal and staff member that was trained to deliver RAP. At three schools, only the staff member was interviewed; at two schools only the principal was interviewed.

Conclusions

Childhood trauma exposure is a significant public health problem. Preventive school mental health interventions have the potential to mitigate the harmful effects of trauma and improve academic, health, and social outcomes across the lifespan. This study examined individual-, school-, and macro-level factors that influenced sustainability of a trauma-informed universal mental health intervention in a large urban school district after participation in a RCT. Most barriers to sustainability were found to be at the school level, including staff turnover, school scheduling, and availability of space in the school to deliver the intervention. Findings from this study also highlight the importance of developing structured sustainability plans with schools during the adoption/early implementation phase, and then working with schools during the post-implementation phase to adapt the intervention to fit into the school's regular routine (including scaling-up the intervention to reach more students in the school).

IMPLICATIONS FOR SCHOOL HEALTH

It is important to implement effective implementation strategies to increase the sustainability of trauma-informed universal mental health interventions that have the

potential to improve students' mental health and academic outcomes. To address staff turnover and shortage issues, researchers should provide training resources online for schools in case staff that get trained in person unexpectedly leave the school or if additional staff need to be trained after the initial in-person training for the intervention has occurred. Researchers should provide schools with estimated costs for scaling up the intervention after research support ends. Funds could be leveraged from private (e.g., foundations) and public sources (e.g., federal funding allocated to states for mental health programming in schools) to secure funding for the intervention upon completion of participation in a research study. Academic-community partnerships could provide additional intervention resources, additional training for school staff, and help schools with applying for funding from private and public sources for the maintenance of the intervention.

Human Subjects Approval Statement

This research was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and by the participating school district.

TABLES

Table 8: Background characteristics from n=20 school administrators and staff

School	Role	Sex	Cohort
1	Principal	F	1 n=12
	Staff	M	
2	Principal	F	
	Staff	M	
3	Principal	M	
	Staff	F	
4	Principal	F	
	Staff	F	
	Staff	F	
5	Interim Principal	M	
	Staff	F	
6	Staff	F	
7	Principal	F	2 n=8*
8	Principal	F	
	Staff	F	
9	Principal	F	
	Vice Principal	M	
10	Staff	F	
11	Staff	F	
12	Staff	F	

*Principal of School 13 from Cohort 2 is not included in this table since she was not formally interviewed but provided responses via email that are included in the analysis

Table 9: Summary of factors that influenced sustainability of RAP Club

Domains from Domitrovich and Colleagues	Key Themes from Data
Individual-Level Factors	
• Perceptions of and attitudes about the intervention	**Facilitators** • Acceptability of intervention • Perceived need to offer the intervention to students • Perceived effectiveness of intervention
• Psychological characteristics	**Barriers** • Low self-efficacy • Concerns about professional burnout
School-Level Factors	
• Administrative leadership	**Facilitator** • Administrative support of RAP Club **Barrier** • Administrative changes
• Decision structure	• Decision to sustain is made solely by principals and/or other administrators • Decision to sustain is made by principal in collaboration with other administrators and staff members
• Personnel expertise	**Barriers** • Turnover and/or shortage of staff trained to deliver intervention
• Resources	**Barriers** • Lack of extra space in the school to deliver intervention • Conflicts with school schedule
Macro-Level Factors	
• Policies and Financing	**Facilitator** • Intervention aligned with district student wholeness policies and priorities for addressing trauma exposure among students and providing programs to promote social and emotional skills **Barriers** • Lack of funding for intervention
• Community-university partnerships	**Barriers** • Removal of certain resources that were present during the research study including outside staff to help deliver the

	intervention, incentives for students, and stipends for school staff • Lack of sufficient communication between schools and researchers regarding how to sustain programming

CHAPTER SIX: DISCUSSION

Dissertation Summary

The purpose of this dissertation was to examine factors that influenced the adoption and sustainability of RAP Club, a trauma-informed universal mental health intervention, in the Baltimore City Public Schools district. To date, implementation research has heavily focused on the implementation phase (e.g., fidelity); less emphasis has been placed on the adoption and sustainability phases (Aarons et al., 2011; Wisdom et al., 2014). Using an adapted version of the Multi-level Implementation Quality Framework developed by Domitrovich and colleagues (2008), the three studies included in this dissertation investigated the individual-, school-, and macro-level factors that influenced adoption of RAP Club during the pre-implementation phase (Aims 1 and 2) and sustainability of RAP Club during the post-implementation phase (Aim 3). The first manuscript examined individual-, school-, and macro-level factors that influenced adoption of RAP Club using a descriptive qualitative multiple-case study design. The second manuscript assessed the association between school-level factors (e.g., decision structure, school climate, chronic absenteeism) and adoption of RAP Club using a quantitative cross-sectional design. The third manuscript explored individual-, school-, and macro-level factors that influenced sustainability of RAP Club using a descriptive qualitative multiple-case study design. This chapter provides a summary discussion of the findings from these three papers and implications for policy, practice, and research.

Research Significance

This research extends mental health, education, and implementation science literature by identifying multi-level factors that influenced adoption and sustainability of

a trauma-informed universal mental health intervention in a large urban school district. Developing strategies to increase the adoption and sustainability of school mental health interventions is essential to achieving maximum academic, behavioral, emotional, and social outcomes for children—especially children of color and children from low-income families that are disproportionately exposed to trauma. This dissertation research helps bridge the research-to-practice gap in school mental health by providing a deeper understanding of factors that influenced the adoption and sustainability of a trauma-informed universal school mental health intervention in a large urban school district. Furthermore, findings could be used to develop and test strategies to increase adoption and sustainability of mental health innovations and EBPs in urban schools more broadly.

Multi-level factors that influenced adoption and sustainability of RAP Club

Individual-level factors

At the individual level, positive perceptions of and attitudes about the intervention influenced adoption and sustainability of RAP Club. This finding underscores the importance of acceptability as an essential requirement for implementation of school mental health interventions. The perception that RAP Club could be used to address stress and trauma exposure among students was described as a key reason why administrators initially adopted the intervention, and a reason why administrators and staff mentioned that they would want to continue offering the program in their school. Prior research suggests that the perception that an intervention is a useful strategy for addressing a problem and that it is better than the current practice is associated with adoption (Domitrovich et al., 2008; Wisdom et al., 2014). However, since none of the 13

schools that implemented RAP Club during the first 2 cohorts of the RCT sustained the intervention, acceptability of the intervention characteristics was not enough.

The main barrier to sustainability at the individual level that was described by administrators and school staff that participated in this study was low self-efficacy among some staff that were trained to deliver the intervention. In addition to training school staff during the pre-implementation phase, findings from Manuscript 3 highlight the importance of providing training and ongoing support to school staff during and after the implementation phase to promote self-efficacy among school staff to deliver school mental health interventions upon conclusion of formal research support and increase the likelihood of program sustainability (Han and Weiss, 2005; Friend et al 2014 paper; Owens et al., 2014; Eiraldi et al., 2015).

School-level factors

Manuscript 1 found that the primary school-level factors that influenced adoption of RAP Club included administrative leadership (e.g., administrators committed to using innovative programs to support students' mental health), decision structure (e.g., adoption decision made together by administrators and staff), and personnel expertise (e.g., lack of staff with expertise in prevention of mental and behavioral disorders). Results from the multiple logistic regression analysis that were discussed in Manuscript 2 confirmed that having a collaborative decision-making structure was positively associated with adoption of RAP Club. Owens and colleagues (2014) noted that principal leadership is an inner-setting characteristic that is particularly relevant to school mental health. Administrators that were interviewed for Manuscript 1 demonstrated a commitment to using innovative programs and practices to support their students' mental health. Previous studies have

emphasized that school administrators "can help transform schools into places that are committed to using innovative programs and practices" (Domitrovich et al., 2008). However, findings from Manuscripts 1 and 2 suggest that the majority of school administrators in this study did not make the decision to adopt RAP Club alone; they collaborated with other administrators, school mental health personnel, and/or teachers before making the final decision to adopt the intervention. Although none of the schools sustained RAP Club, findings from Manuscript 3 suggest that administrators might also involve staff in the decision-making process to sustain RAP Club.

Although the influence of school climate dimensions (e.g., safety, relationships/engagement, environment, teaching and learning) did not emerge as a major finding from Manuscript 1, and was not statistically significant in the multiple logistic regression analysis conducted for Manuscript 2, these studies brought unexpected attention to the differences in school climate between schools that adopted RAP Club and schools that did not adopt RAP Club. School climate was not found to facilitate or hinder sustainability in Manuscript 3. School climate findings across Manuscripts 1 and 2 are described below.

In Manuscript 1, administrators did not discuss school climate as a direct influencer of their decision to adopt RAP Club, but many of them described having a positive school climate including safety and supportive relationships between staff and students. Descriptive quantitative findings from Manuscript 2 revealed that schools that adopted RAP Club had more indicators of positive school climate compared to schools that did not adopt RAP Club. School climate has been theorized to be associated with adoption of mental health innovations and EBPs (Domitrovich et al., 2008).

Furthermore, researchers have noted that schools that provide a positive school climate (i.e., nurturing, supportive, and safe environment) may be more willing to commit to school mental health interventions (Bradshaw, Koth, Thornton, & Leaf, 2009; Domitrovich et al., 2008).

Macro-level factors

The main macro-level factors that influenced adoption and sustainability of RAP Club are policies and financing and community-university partnerships. Administrators that participated in this study mentioned that RAP Club was aligned with the district's student wholeness policies and priorities for addressing trauma and providing programs to support students' social and emotional needs. Although the district's financing structure does not systematically provide funding to all schools in the district for preventive mental health interventions, district leadership still encourages principals to offer these types of interventions. Several administrators mentioned that the free cost of RAP Club was one of the main reasons why they decided to adopt the intervention and that lack of funding after the research study ended was a barrier to sustainability.

Community-university partnerships was another macro-level factor that heavily influenced the adoption and sustainability of RAP Club. Many administrators expressed that they wanted to adopt RAP Club because of the benefits of partnering with a university to deliver interventions including additional staff to help implement the intervention; funding and resources (e.g., staff stipends, materials, incentives for students) for the intervention; expertise of university partners; and involvement of young adults who could serve as role models for students. The end of the research study was described by some administrators and staff members a barrier to sustainability due to the

removal of financial incentives from the research study and the perceived lack of any continued support (e.g., training and materials) from the research team to continue delivering the intervention.

Methodological Limitations

Specific limitations for each analysis were included in the earlier presented manuscripts. Here, I describe overall limitations of this dissertation. First, there were limitations related to the qualitative study samples for Manuscripts 1 and 3 and the quantitative sample for Manuscript 2. The school-level participation rate for Manuscript 1 was 70% (administrators from 14 of 20 eligible schools). The sampling goal for Manuscript 1 was to interview all 20 principals that adopted RAP Club. However, only 14 principals (including 1 interim principal) were successfully recruited. At the request of one of these principals, the vice principal joined the interview since he was also knowledgeable about adoption and sustainability of RAP Club; this increased the sample size of participating administrators to 15. The school-level participation rate for Manuscript 3 was 92% (administrators and/or school staff members from 12 of 13 eligible schools). The sampling goal for Manuscript 3 was to interview all 13 principals of schools that implemented RAP Club and 14 staff members at these schools who were trained to deliver RAP Club. However, only 8 of 13 eligible principals (not counting the vice principal participated in joint interview with the principal) and 11 of 14 eligible school staff were successfully recruited; the participation rate was 70%. While these are acceptable participation rates, the in-depth perspectives of 6 principals and 3 staff members are missing from the analysis for these studies (see Appendix A). Although complete representation from all schools would have been ideal, the perspectives of the

administrators and staff members that were not interviewed would not likely impact study results too much since saturation was reached with the samples for Manuscripts 1 and 3.

The small quantitative sample size (n=92 schools) limited precision of the multiple logistic regression analysis that was described in Manuscript 2. Nothing could have been done to increase the sample size for the study since there were only 92 schools with an 8th grade in the BCPS district that were eligible to adopt RAP Club and only a maximum of 24 schools could have adopted RAP Club across the first 3 cohorts of the RAP Club RCT (goal was to recruit 8 schools per year). However, there was enough power to detect statistical significance.

Implications for policy and practice

Policy implications

In the U.S., the federal role in education is limited; responsibility is primarily at the state and local levels (U.S. Department of Education, 2017). Only about 8% of federal funds from the U.S. Department of Education (ED), Department of Health and Human Services' Head Start program and the Department of Agriculture's School Lunch program are spent on elementary and secondary education (ED, 2017). Thus, this section focuses on important implications that this dissertation has for local and state education policy. The findings from Manuscripts 1-3 suggest ways that local and state education policymakers (e.g., principals, district administrators, State Board of Education) could influence the adoption and sustainability of trauma-informed universal mental health interventions in under-resourced urban public schools. The ability to adopt the suggested policies might depend on factors such as cost, feasibility, and acceptability.

State Education Policy

Addressing trauma exposure and promoting the mental health of students are growing concerns in Maryland and other states throughout the nation (Maryland State Department of Education, 2018). Pressing public health crises that are connected to mental and behavioral health—including mass shootings in schools, the opioid epidemic, and spikes in teen suicide rates—have prompted action from states including increasing funding for counseling and school mental health personnel; providing mental health first aid training for teachers and other school staff to detect potential signs of mental and behavioral disorders and refer students for mental health treatment when needed; and mandating or encouraging suicide prevention training for school personnel (Vestal, 2018). New York and Virginia recently passed laws to require mental health education in kindergarten through 12th grade and in 9th and 10th grades, respectively (Vestal, 2018). Examples of states that have established frameworks for trauma-responsive schools include Massachusetts, Washington, Illinois, and Wisconsin (Hoover, 2019). Trauma-informed efforts across these states include providing grants to schools to "establish and implement trauma-informed practices and to train leadership to foster safe and supportive school cultures" (Massachusetts); strategic planning for "establishing trauma-responsive schools that promote compassion and resiliency among staff and students" (Washington); and state education agencies (SEAs) providing a repository of trauma-responsive schools resources (Illinois, Massachusetts, and Wisconsin) (Hoover, 2019). Other states are also encouraged to create and implement trauma-informed laws and policies, and to provide funding for and resources about trauma-informed initiatives in schools.

State education policymakers and administrators could benefit from understanding the multi-level factors presented in this dissertation that impact the

adoption and sustainability of trauma-informed universal mental health interventions, which could serve as another layer of support for promoting mental health in schools and supporting the academic, social and emotional needs of students. For example, since funding was found to be a factor that influences both adoption and sustainability, SEAs could decide to apply for funds from the U.S. Department of Education (via the Every Student Succeeds Act (ESSA)) to allocate annual funding and resources to local school districts that could benefit from trauma-informed universal school mental health interventions (e.g., schools located in areas with high rates of poverty, crime, and violence).

Recommendations for the state of Maryland are below:

- **Recommendation #1: Require training for school personnel about how to understand and respond to trauma in schools**. According to a recent report by the Maryland State Board of Education Mental Health Committee (Guyton, Iszard, Salmon, Sallee, & Nelson, 2017), House Bill 920 Primary and Secondary Education – Certified School Personnel – Training Requirement that was passed in 2017 (and has since been signed into law), "requires that certified school personnel who have direct contact with students complete training designed to understand and respond to youth suicide risk to assist students in crisis" (p. 12). Similarly, a bill could be passed to require the school personnel to understand and respond to trauma. Increased awareness about the effects of trauma could contribute to increased adoption and sustainability of trauma-informed universal mental health interventions in schools across the state.

- **Recommendation #2: Expand Resource Guide of Maryland School Mental Health and Wellness Programs to include trauma-informed universal mental health programs**. The resource guide is designed to be distributed to local Superintendents, Directors of Student Services, School Counselors, School Psychologists, and other relevant school staff regarding best practices for school mental health, with a focus on suicide prevention. None of the programs currently listed in the guide are trauma-informed (Guyton et al., 2017). In addition to including promising and evidence-based trauma-informed universal school mental health interventions, the expanded guide should also include estimated implementation costs to give district and school leaders an idea of how much it would cost to deliver recommended interventions.
- **Recommendation #3: Provide funding and/or help schools secure funding for trauma-informed school mental health interventions (including universal programs).** Aligned with Recommendation 4 for Youth Suicide Prevention in the Maryland State Board of Education's 2017 Mental Health Committee Report, SEAs could "explore and share with local school systems external funding opportunities (grants, foundation, and corporate support) to leverage partnerships with state agencies and national organizations" to promote adoption and sustainability of trauma-informed universal interventions. Funding could be used for implementation-related costs of these interventions including training, materials and supplies, and incentives for staff working with the interventions.

Local Education Policy

At the local level, it is imperative for district- and school-level administrators to integrate school climate and mental health policies to move towards the creation of trauma-informed/trauma-responsive schools that promote the social, emotional, and psychological well-being of students. The Baltimore City Public Schools district has already laid a foundation for these policies through the creation and distribution of the district's 2017 Blueprint for Student Success that includes policies for student wholeness, literacy, and school leadership. For example, the first expectation for schools listed under the student wholeness policy encourages schools to, "support students in developing self-awareness, responsible decision-making, relationship building, social awareness skills, and self-management, the five areas of competence outlined in the framework for social-emotional learning from the Collaborative for Academic, Social and Emotional Learning (CASEL)" (BCPS, 2017). RAP Club is an example of an intervention that is trauma-informed and teaches the aforementioned social-emotional skills. Since the components of the student wholeness policy are newly being implemented, the following recommendations should be considered:

- **Recommendation #1: Assess and systematically improve school climate (Hoover, 2019)**. In this study, schools that adopted RAP Club had more positive school climate indicators than schools that did not adopt RAP Club. Since universal mental health programs can support the improvement of school climate, it is important for district- and school-level administrators to understand which areas of school climate need improvement, what universal program(s) would be most appropriate to implement, and how the implementation of universal programs impacts school climate.

- **Recommendation #2: Develop and disseminate a resource guide of school mental health and wellness programs that are being delivered in Baltimore City Public Schools**. Similar to the state's school mental health resource guide, the district office could produce a guide that includes a description of school mental health interventions (including universal programs), key components, expected outcomes/benefits, estimated implementation costs, and link(s) to additional resources about the intervention. RAP Club should be included in the guide as a promising program that could improve the social-emotional skills of students and contribute to positive school climate.
- **Recommendation #3: Enhance existing student wholeness professional development activities to include training and seminars on best practices for implementing and sustaining school mental health interventions.** BCPS is already dedicating professional development days towards mental health education and training to help strengthen the expertise of school staff in mental health promotion and prevention of mental health and behavioral disorders. These activities could be enhanced by sharing implementation strategies with school administrators and staff to increase the adoption and sustainability of RAP Club and other school mental health interventions.

If the aforementioned recommendations are implemented, they would be aligned with the U.S. Department of Education's implementation of ESSA, which includes a vision for safe and supportive schools, and encourages schools to provide trauma-informed interventions and services that promote mental health, improve academic

achievement, and help prevent mental and behavioral disorders among students (US Department of Education, 2018).

Practice implications

Multi-sectoral collaboration is needed to advance mental health in under-resourced schools. The BCPS Blueprint for Student Success encourages schools to form partnerships with local universities and community mental health agencies that could assist with the implementation of school mental health programs. These partnerships could be instrumental in providing staff, funding, and other resources to deliver RAP Club and other preventive school mental health interventions.

There is often a misconception in schools that only mental health clinicians (e.g., social workers and psychologists) and guidance counselors can deliver mental health programs in schools. It is important for school administrators to understand that lay school personnel—such as teachers and restorative practices facilitators—can be trained to successfully deliver preventive mental health interventions as well. However, it is important for administrators to get buy-in and support from school staff that might be involved in implementation during the *pre*-implementation phase to decrease resistance from staff and increase the likelihood of successful implementation and sustainability of RAP Club and other school mental health interventions. Students in need of additional mental health services (e.g., individual or family counseling) could be referred to mental health providers inside or outside of the school.

Researchers should provide schools with estimated costs for scaling up preventive mental health interventions after research support ends. Funds could be leveraged from

private (e.g., foundations) and public sources (e.g., SEAs or district) to secure funding for the intervention upon completion of participation in a research study. Academic-community partnerships could provide intervention resources, additional training for school staff, and potentially help schools with applying for funding from private and public sources for maintenance of the intervention. For example, researchers could host grant-writing workshops to help school administrators gain skills to identify and apply for funding for RAP Club and other preventive mental health interventions.

Future Research

While this research filled an important gap in multi-level factors that influence the adoption and sustainability of trauma-informed universal mental health interventions in under-resourced urban schools, there is room for additional research on specific implementation strategies to increase the uptake and maintenance of these interventions, especially after they are delivered in the context of an RCT. Multi-level strategies need to be developed and tested to increase the adoption and sustainability of trauma-informed universal and other types of preventive mental health interventions in schools.

There is growing recognition that administrative leadership (including collaborative decision-making between administration and staff) is critical for the success of school mental health interventions (Lyon n.d.; Aarons et al., 2014). Owens and colleagues (2014) posited that, "careful analysis of principal leadership prior to implementation may be critically important" because it may determine the extent to which school mental health programs are valued and promoted, and the way in which implementation challenges are perceived and managed. Additional research is needed to determine the characteristics of administrators that choose to adopt preventive mental

health interventions compared to administrators that choose not to adopt these interventions to devise targeted implementation strategies to increase adoption of these interventions by administrators. Additional research is also needed to determine which factors are likely to increase the buy-in and support from school staff for the adoption of RAP Club and other school mental health interventions.

Additional sustainability research should determine how to address implementation challenges and adapt preventive school mental health interventions to fit into the regular routine of schools after the research study ends. Implementation strategies to increase sustainability of these interventions could be tested in future studies to gain insight on the right combination of training and support (besides funding) that should be provided to schools to increase sustainability of preventive school mental health interventions. For example, an enhanced vs. regular training model, online consultation vs. in-person consultation during implementation, and structured sustainability plans vs. semi-structured sustainability plans could be tested to determine strategies that increase sustainability of preventive mental health interventions in schools.

CONCLUSION

Overall findings from this dissertation suggest that the adoption and sustainability of a trauma-informed universal mental health intervention in a large urban school district was influenced by individual-, school-, and macro-level factors. Acceptability was important at the individual level for adoption but did not lead to sustainability, although most administrators and staff found the program to be acceptable. A collaborative decision-making structure between school administration and staff was the most important school-level factor that was associated with adoption, while several barriers to sustainability existed at the school-level (e.g., conflicts with school schedule and space). Community-university partnerships positively impacted adoption but negatively impacted sustainability when the research study ended. These findings point to the need for multi-sectoral collaboration and the development and testing of multi-level implementation strategies to increase the adoption and sustainability of trauma-informed universal and other types of preventive mental health interventions in under-resourced schools.

REFERENCES

APPENDICES

Appendix A: Recruitment Table for Non-Participants

Cohort	School	Sex	Role	Reason for not participating
1	6	M	Principal	Research team was unable to scheduled interview with principal after cohort 1 ended
2	7	M	Staff	Scheduling conflicts; expressed interest in participating but was unable to schedule interview before recruitment ended
	9	F	Staff	No response; principal and vice principal said their staff are very busy
	10	M	Principal	No response
	11	F	Principal	No longer at the school; moved out of state; responded via email that she participated in the program from a distance and didn't have much feedback to share
	12	F	Principal	No response
	13	F	Principal	Declined formal interview due to lack of time/busy schedule; sent brief email responses to a couple questions about RAP Club's adoption and sustainability that were used in the analysis of the 3 papers
		F	Staff	No response
3	20	F	Principal	Scheduling conflicts; expressed interest in participating but was unable to schedule interview before recruitment ended

Appendix B: Quantitative Study Variables

Domain	Category or Scale	Construct	Measurement/ Variable Details
School characteristics	School size	Enrollment count	Number of student enrollment
			Coded as: '1' for large school if 452 or more students '0' for small school if less than 452 students
	Discipline	Suspensions and expulsions	Percentage of suspensions and expulsions
			Coded as: '1' for low suspensions and expulsions if less than 9% '0' for high suspensions and expulsions if 9% or more
	Attendance	Chronic absences	Percentage of students that missed more than 20 days of school
			Coded as: '1' for low chronic absences if less than 13% '0' for high chronic absences if 13% or more
	Family income indicator	FARMS	Percentage of students eligible for free and reduced meals
			Coded as: '1' for low FARMS if less than 76%

			'0' for high FARMS if 76% or more
	Limited English proficiency	LEP	Percentage of students with limited English proficiency
			Coded as: '1' for low LEP if less than 5% '0' for high LEP if 5% or more
	Special education	Special education students	Percentage of students in special education programs
			Coded as: '1' for low special education population if less than 15% '0' for high special education population if 15% or more
Administrative Leadership	Collaborative decision structure	The school administration promptly responds to my concerns	Coded as: '1' for high ratings of administration's collaborative decision structure if 75% or more '0' for low ratings of administration's collaborative decision structure if less than 75%
		Feedback from the community influences the administrations' decision-making	
		I have the opportunity to provide input into the school's programmatic decisions	
		I have the opportunity to provide input into the school's budgetary decisions.	
		Collaboration among school staff is valued in this school	
	Communication	The school mission is clearly communicated	Coded as: '1' for high ratings of communication if 87% or more
		The school administration supports the staff in performing their duties	

		Staff members know what is expected of them	'0' for low ratings of communication if less than 87%
		The school administration provides teachers actionable feedback on their instructional practices	
		I feel valued by the administration at this school.	
School Climate			
Institutional Environment	Physical Environment	The school building is clean and well maintained	Coded as: '1' for high ratings of physical environment if 73% or more '0' for low ratings of physical environment if less than 73%
		Students have satisfying food options at this school	
		This school is well lit	
		It is often too hot at this school	
		It is often too cold at this school	
	Resources and supplies	This school has programs that address conflict and violence among students	Coded as: '1' for high ratings of resources and supplies if 83% or more '0' for low ratings of resources and supplies if less than 83%
		This school has an effective Student Support Team	
		This school has programs to support students' emotional and social development	
		This school has programs/services to help students with suspected learning problems	
		Teachers provide extra academic help to students who need it	
		I have adequate supplies to do my job.	

		There is sufficient school-based professional development for staff regarding classroom behavior management practices	
Relationships/ Engagement	Staff: Staff engagement with school and relationships with other staff	I would recommend this school to others	Coded as: '1' for high ratings of staff engagement if 83% or more '0' for low ratings of staff engagement if less than 83%
		I view my work as contributing to student success in the district	
		I view my work as contributing to my professional growth.	
		I feel like I belong at this school	
		School Staff respect each other	
		The staff are willing to help each other out	
	Students: Student relationships with staff and other students	Students respect each other	Coded as: '1' for high ratings of student engagement if 84% or more '0' for low ratings of student engagement if less than 84%
		Students respect school staff	
		Teachers care about their students	
		Teachers feel responsible for their students' social and emotional development	
		School staff respect the students	
	Family: Relationship between school and parents	Parents or guardians are welcome at this school	Coded as: '1' for high ratings of family involvement if 91% or more '0' for low ratings of family involvement if less than 91%
		When a student does something good at school, the parents are informed	
		When a student does something bad at school, the parents are informed	

		School staff work closely with parents to meet students' needs	
		This school regularly communicates with parents about how they can help their children learn	
Safety	Emotional safety	I feel safe at this school	Coded as: '1' for high ratings of emotional safety if 87% or more '0' for low ratings of emotional safety if less than 87%
		Students feel safe at this school	
		Students feel safe going to and from school	
	Physical safety	Students are often NOT roaming in the halls during class time at this school	Coded as: '1' for high ratings of physical safety if 73% or more '0' for low ratings of physical safety if less than 73%
		Students fighting is NOT a problem at this school	
		Vandalism of school property is NOT a problem at this school	
		Student possession of weapons like knives and guns is NOT a problem at this school	
		Students picking on/bullying other students is NOT a problem at this school	
		Student drug/alcohol use is a problem at this school	
	Rules and norms	If students break rules, there are fair consequences	Coded as: '1' for high ratings of rules and norms if 79% or more
		This school has clear expectations for student behavior	

		This school provides an orderly atmosphere for learning	'0' for low ratings of rules and norms if less than 79%
		Students are rewarded for positive behavior	
Teaching and Learning	Teaching and learning	This school does a good job educating students	Coded as: '1' for high ratings of teaching and learning if 92% or more '0' for low ratings of teaching and learning if less than 92%
		I like the classes I teach (includes N/A response option for non-teachers)	
		Teachers regularly inform students about lesson objectives (includes N/A response option for non-teachers)	
		Teachers encourage students to take challenging classes (includes N/A response option for non-teachers)	
		I am well organized and prepared	
		Teachers feel responsible for their students' academic success	
		This school prepares students for college or to have a career	
		Students have the chance to participate in music, art, dance, or plays at this school	
		Teachers participate in weekly collaborative planning time at this school (includes N/A response option for non-teachers)	
		There are opportunities for teachers to serve in leadership roles at this school	
		There is sufficient school-based	

		professional development for staff regarding instructional practices	

Appendix C: Guides for Interviews with Principals and Staff

Original Interview Guide for Principals for Cohort 1

[Interview to be conducted with principal of partner schools.]

What made you decide to partner with Hopkins on the 8th grade wellness project?

What is your understanding of the main goal of RAP Club? What about Healthy Topics? How did you learn about the program goals?

What was your impression of how interested or engaged the students were in RAP Club? In Healthy Topics? What gave you that impression? [Probe regarding what evidence the principal has for his or her impression.]

How helpful were either of the programs for the students? What gave you this impression? [Probe on the differences between each of the programs]

What was your experience regarding how the programs fit into school scheduling and school activities? [Probe on the differences between each of the programs}

Could you describe any logistical challenges to offering the programs in your school? Any other challenges?

What is your opinion about whether the school should continue to offer either of these programs in the future? Why or why not?

What was your experience interacting with the group leaders?

What was your experience interacting with the research staff?

What, if anything, do you wish had been done differently?

Is there anything else about your experience that you would like to share?

Thank you for your time.

Expanded Interview Guide for Principals before Implementation of the Programs
[Interview to be conducted with principal of partner schools]

Previous experiences with mental health programs

1. Have you had any previous experiences with programs similar to RAP Club that focus on preventing the effects of trauma exposure among students? If so, tell me about how the program(s) worked.
    a. **Follow up**: Was the program for all students or a select group of students?
2. Tell me about any current programs at your school that support students' social and emotional development. What about any programs that are trauma-informed or focused on mental health?
    a. **Follow up**: When are the programs offered? Which students are the programs for (e.g., all students, subgroups of students, etc.)?

Intervention perception & attitudes

1. What is your understanding of the main goal of RAP Club? What about Healthy Topics? How did you learn about the program goals?
2. How do you think RAP Club will fit the needs of your students?
    a. **Follow up**: In which areas do you think the program will be most beneficial?

School-Level factors:

Mission/Policy Alignment

1. Based on what you know about RAP Club, how do you think it fits with your school's overall values and priorities?
2. How will the programs fit into school scheduling and school activities?
3. To what extent do you think RAP Club is a good fit for urban 8th graders?

Administrative Leadership & Decision Structure

1. What factors influence the decision to adopt or try out new trauma-informed mental health programs at your school? What about other mental health programs?
    a. **Follow up**: Who is usually involved in the decision-making process for adopting or trying out new trauma-informed and other mental health interventions at your school? [probe for who needs to be at the table to help make the decision]
    b. **Follow up**: To what extent does it matter if you partner with a university or community organization to deliver a mental health program in your school?
2. Tell me about the specific factors that influenced your decision to adopt the RAP Club intervention.
    a. **Follow up**: How did your professional background and experiences influence your decision to allow the RAP Club Program to be delivered in your school?
    b. What influenced your decision to partner specifically with Hopkins on the 8th grade wellness project that includes RAP Club?
    c. **Follow up**: What is your opinion about the benefits and challenges of partnering with a university to deliver a program like RAP Club that is part of an academic research study?

3. What is your understanding of what is supposed to happen after the research study ends?
    a. **Probe** for things like attending more training, training new staff, adapting the program to better fit into regular school routine, etc.

Resources and Personnel Expertise

1. Does your school have a Student Support Team?
    a. **Follow up**: If so, who is on the team and what are the team's functions? [probe for role of SST in identifying and/or addressing mental health needs of students]
    b. **Follow up:** To what extent is the SST involved in the decision-making process for adopting or continuing to offer trauma-informed mental health programs? To what extent is the SST involved in the delivery of trauma-informed mental health programs?
2. Tell me about the process in place when a staff member thinks that a student might have a trauma-related mental health or behavioral disorder.
    a. **Follow up**: Who would the students see within the school (e.g., social worker, school psychologist, guidance counselor, etc.)? Which staff members are considered to be school mental health providers? Who would students be referred to outside of the school?
    b. **Follow up**: Describe any partnerships that your school has with local community mental health organizations such as the Behavioral Health System of Baltimore. What about partnerships with government agencies like the health department? OR with community-based organizations such as the Youth Opportunity Center?

School Climate (Safety, Engagement, and Environment) & Other Characteristics

1. How do you think your school's environment influences students' mental health?
2. What, if anything, would you like to change about your school's environment?
    a. **Probe** for things like physical environment, classroom climate, etc.
3. Tell me about alcohol/substance use, safety and/or any disciplinary concerns among the students. How prevalent are these concerns among the students in your school?
    a. **Follow up**: How do you think programs like RAP Club can help address these concerns?
4. How does parental involvement at your school influence the success of programs like RAP Club?

Macro-Level factors:

Policies & Financing

1. To what extent do you feel that the Baltimore City Public Schools District is prioritizing trauma exposure and other mental health concerns among students? What gives you this impression?
2. Describe how mental health services and programs are funded at the district and school levels? What about at your school?

a. **Follow up**: How do mental health prevention programs like RAP Club usually get funded?

3. What support do you think the City Schools District should provide to schools to ensure the delivery of mental health programs in schools each year?
    a. **Probe** for things like funding, training, staff, flexibility with school schedule, etc.

Wrap up question:
Is there anything else that we haven't talked about that you would like to add?
Thank you for your time.

Expanded Interview Guide for Principals after Implementation of the Programs
[Interview to be conducted with principal of partner schools.]

Previous experiences with mental health programs

3. Have you had any previous experiences with programs similar to RAP Club that focus on preventing the effects of trauma exposure among students? If so, tell me about how the program(s) worked.
    a. **Follow up**: Was the program for all students or a select group of students?
4. Tell me about any current programs at your school that support students' social and emotional development. What about any programs that are trauma-informed or focused on mental health?
    a. **Follow up**: When are the programs offered? Which students are the programs for (e.g., all students, subgroups of students, etc.)?

Intervention perception & attitudes

1. What is your understanding of the main purpose of RAP Club? What about Healthy Topics? How did you learn about the program goals?
    a. **Follow up**: In what ways do you think RAP Club attempts to achieve these goals?
2. What was your experience with the RAP Club program?
    a. **Probe** for which staff they interacted with (e.g., research staff, community co-facilitators, intervention group leaders, etc.).
3. How helpful were either of the programs for the students? What gave you this impression?
    a. **Probe** on the differences between each of the programs
    b. **Follow up**: To what extent was RAP Club a good fit for urban 8th graders?
4. What was your impression of how interested or engaged the students were in RAP Club? In Healthy Topics? What gave you that impression?
    a. **Probe** regarding what evidence the principal has for his or her impression.
5. What was your experience regarding how the programs fit into school scheduling and school activities?
    a. **Probe** on the differences between each of the program.
    b. **Probe** for issues with space, timing of the program during the school day, etc.

6. Describe any logistical challenges to offering the programs in your school? Any other challenges?

School-Level factors:

Mission/Policy Alignment

4. Based on what you know about RAP Club, how do you think it fits with your school's overall values and priorities?

Administrative Leadership & Decision Structure

4. What factors influence the decision to adopt or try out new trauma-informed mental health programs at your school? What about other mental health programs?
    a. **Follow up**: Who is usually involved in the decision-making process for adopting or trying out new trauma-informed and other mental health interventions at your school?
        i. **Probe** for who needs to be at the table to help make the decision
    b. **Follow up**: To what extent does it matter if you partner with a university or community organization to deliver a mental health program in your school?
5. Tell me about the specific factors that influenced your decision to adopt the RAP Club intervention?
    d. **Follow up** How did your professional background and experiences influence your decision to allow the RAP Club Program to be delivered in your school?
    e. **Follow up:** What influenced your decision to partner with Hopkins on the 8th grade wellness project?
    f. **Follow up**: What is your opinion about the benefits and challenges of partnering with a university to deliver a program like RAP Club that is part of an academic research study?
6. What is your understanding of what was supposed to happen after the end of the wellness research study that included RAP Club?
    a. **Probe** for things like attending more training, training new staff, adapting the program to better fit into regular school routine, etc.
7. What are some of the reasons that the RAP Club did not continue after the research study ended?
    a. **Follow up**: What are the chances of RAP Club being implemented again in your school?
    b. **Follow up:** What are some reasons why you would or would not want the program to continue?
        i. **Follow up**: What resources (e.g., staff, more training, space, etc.) would you need to successfully deliver the program again in your school?
    c. **Follow up:** What, if anything, do you wish had been done differently?

Resources and Personnel Expertise

3. Does your school have a Student Support Team?
    a. **Follow up**: If so, who is on the team and what are the team's functions?

b. **Probe** for role of SST in identifying and/or addressing mental health needs of students.
c. **Follow up:** To what extent is the SST involved in the decision-making process for adopting or continuing to offer trauma-informed mental health programs? To what extent is the SST involved in the delivery of trauma-informed mental health programs?

4. Tell me about the process in place when a staff member thinks that a student might have a trauma-related mental health or behavioral disorder.
    a. **Follow up**: Who would the students see within the school (e.g., social worker, school psychologist, guidance counselor, etc.)? Which staff members are considered to be school mental health providers? Who would students be referred to outside of the school?
    b. **Follow up**: Describe any partnerships that your school has with local community mental health organizations such as the Behavioral Health System of Baltimore. What about partnerships with government agencies like the health department? OR with community-based organizations such as the Youth Opportunity Center?

School Climate (Safety, Engagement, and Environment) & Other Characteristics

5. How do you think your school's environment influences students' mental health?
6. What, if anything, would you like to change about your school's environment?
    a. **Probe** for things like physical environment, classroom climate, etc.
7. Tell me about alcohol/substance use, safety and/or any disciplinary concerns among the students. How prevalent are these concerns among the students in your school?
    a. **Follow up**: How do you think programs like RAP Club can help address these concerns?
8. How does parental involvement at your school influence the success of programs like RAP Club?

Macro-Level factors:

Policies & Financing

4. To what extent do you feel that the Baltimore City Public Schools District is prioritizing trauma exposure and other mental health concerns among students? What gives you this impression?
5. Describe how mental health services and programs are funded at the district and school levels? What about at your school?
    a. **Follow up**: How do mental health prevention programs like RAP Club usually get funded?
6. What support do you think the City Schools District should provide to schools to ensure the delivery of mental health programs in schools each year?
    a. **Probe** for things like funding, training, staff, flexibility with school schedule, etc.

Wrap up question:

Is there anything else that we haven't talked about that you would like to add?

Thank you for your time.

Interviews with RAP Club Teachers-In-Training
[Interview with the school counselor/teacher who attended RAP Club and supervision calls.]

Please tell me about the role you played in delivering the RAP Club program at your school.

What do you think are the key program elements of RAP Club? What gives you this impression?

What is your impression of how interested or engaged the students were in RAP Club? What gave you that impression? [Probe regarding what evidence the instructors have for their impression.]

What sorts of concepts and activities did students seem particularly interested in? What makes you think so? [Probe regarding what evidence the instructors have for their impression.]

At the same time, could you tell me about any types of concepts or activities that were not interesting or valuable for the students? What makes you think so? [Probe re evidence for these impressions.]

What sorts of changes, if any, did you notice in students who participated in the RAP Club program?

How do you think this program causes change in students' behavior?

Were there any events or factors that you experienced that may have influenced the way the program was implemented at your school? If so, could you describe what they were and how they influenced the implementation?

Could you describe your feelings about the fit of this program for urban eighth graders? What about the fit for the school you work in?

What types of changes, if any, should be made to the program content? What about changes to the way the program was delivered?

Tell me about whether or not you'd like to continue offering this program at your school. Why or why not?

What factors are related to whether your school continues to offer the program? What would facilitate this?

What challenges did you face in learning how to lead RAP Club?

Describe whether you feel your training and supervision were adequate. Was there anything you would have changed about the type or amount of support and training you received?

What kind of support did you receive from the group co-leaders?
Did you receive enough support?
What additional support might have been helpful?

What was your experience coordinating with the research team? What might have improved your experience working with the research team?

Is there anything else about your experience that you would like to share?

Thank you for your time.

Appendix D: Information obtained from interview documents

Questions Analyzed from Intervention Fidelity Logs

- What was the most successful part of the session?
- What was the most challenging part of the session?
- What would be helpful to discuss in supervision?

Primary Questions Asked during Supervision Calls

- What was the last session completed at each school?
- How many students attended the last session?
- How was the engagement of the students?
- Was teacher present in the classroom?
- What was the most successful aspect of the session?
- What was the most challenging aspect of the session?
- Overall Feedback*

*Overall feedback was only asked during the last supervision call

BIBLIOGRAPHY

Aarons, G. A., Hurlburt, M., & Horwitz, S. M. (2011). Advancing a conceptual model of evidence-based practice implementation in public service sectors. *Administration and Policy in Mental Health, 38*(1), 4-23. doi:10.1007/s10488-010-0327-7

Alegria, M., Vallas, M., & Pumariega, A. J. (2010). Racial and ethnic disparities in pediatric mental health. *Child and Adolescent Psychiatric Clinics of North America, 19*(4), 759-774. Retrieved from http://health-equity.pitt.edu/3190

Alison Cuellar. (2015). Preventing and treating child mental health problems. *The Future of Children, 25*(1), 111-134. doi:10.1353/foc.2015.0005

Altman, D. G., & Royston, P. (2006). The cost of dichotomising continuous variables. *Bmj, 332*(7549), 1080. doi:10.1136/bmj.332.7549.1080

Backer, T. E., Liberman, R. P., & Kuehnel, T. G. (1986). Dissemination and adoption of innovative psychosocial interventions. *Journal of Consulting and Clinical Psychology, 54*(1), 111-118. doi:10.1037/0022-006X.54.1.111

Baltimore City Public Schools (BCPS) (n.d.). School Survey Data, 2015-2016. Data retrieved from http://www.baltimorecityschools.org/Page/31013

Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. *BMC Psychology, 3*(1) doi:10.1186/s40359-015-0089-9

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report, 13*(4), 544-559. Retrieved from https://nsuworks.nova.edu/tqr/vol13/iss4/2

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27-40. doi:10.3316/QRJ0902027

Bradshaw, C. P., Koth, C. W., Thornton, L. A., & Leaf, P. J. (2009). Altering school climate through school-wide positive behavioral interventions and supports: Findings from a group-randomized effectiveness trial. *Prevention Science: The Official Journal of the Society for Prevention Research, 10*(2), 100-115. doi:10.1007/s11121-008-0114-9

Centers for Disease Control and Prevention. (2016). Key findings: Mental health report | children's mental health. Retrieved from https://www.cdc.gov/childrensmentalhealth/features/kf-childrens-mental-health-report.html

Center for Innovation Research and Teaching. Case study method. Retrieved from https://cirt.gcu.edu/research/developmentresources/research_ready/descriptive/case_study

Child and Adolescent Health Measurement Initiative. (2012). National survey of children's health. Retrieved from http://childhealthdata.org/learn/NSCH

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*(1), 128-152.

Covey, H. C., Menard, S., & Franzese, R. J. (2013). Effects of adolescent physical abuse, exposure to neighborhood violence, and witnessing parental violence on adult socioeconomic status. *Child Maltreatment, 18*(2), 85-97. doi:10.1177/1077559513477914

Creswell, J. W. (2007). Chapter 10: Standards of validation and evaluation. *Qualitative inquiry and research design: Choosing among five approaches* (pp. 201-222) Sage, Thousand Oaks, California.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334.

Cummings, G. G., Estabrooks, C. A., Midodzi, W. K., Wallin, L., & Hayduk, L. (2007). Influence of organizational characteristics and context on research utilization. *Nursing Research, 56*(4), S39.

Cummings, J. R., Ponce, N. A., & Mays, V. M. (2010). Comparing racial/ethnic differences in mental health service use among high-need subpopulations across clinical and school-based settings. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine, 46*(6), 603-606. doi:10.1016/j.jadohealth.2009.11.221

Currie, J., & Spatz Widom, C. (2010). Long-term consequences of child abuse and neglect on adult economic well-being. *Child Maltreatment, 15*(2), 111-120. doi:10.1177/1077559509355316

Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: Effects of environment, organization and top managers 1. *British Journal of Management, 17*(3), 215-236.

Damanpour, F., & Schneider, M. (2009). Characteristics of innovation and innovation adoption in public organizations: Assessing the role of managers. *Journal of Public Administration Research and Theory, 19*(3), 495-522.

Denzin, N. K. (1989). *The research act : A theoretical introduction to sociological methods /* (3rd ed. ed.). Englewood Cliffs, N.J. : Prentice Hall,.

DeRosa, R., Habib, M., Pelcovitz, D., Rathus, J., Sonnenklar, J., Ford, J., . . . Turnbull, A. (2006). Structured psychotherapy for adolescents responding to chronic stress. *Unpublished Manual.*

Domitrovich, C. E., Bradshaw, C. P., Poduska, J. M., Hoagwood, K., Buckley, J. A., Olin, S., . . . Ialongo, N. S. (2008). Maximizing the implementation quality of evidence-based preventive interventions in schools: A conceptual framework. *Advances in School Mental Health Promotion, 1*(3), 6-28. doi:10.1080/1754730X.2008.9715730

Eccles, M. P., & Mittman, B. S. (2006). Welcome to implementation science. *Implementation Science, 1*(1), 1. doi:10.1186/1748-5908-1-1

Eiraldi, R., Wolk, C. B., Locke, J., & Beidas, R. (2015). Clearing hurdles: The challenges of implementation of mental health evidence-based practices in under-resourced schools. *Advances in School Mental Health Promotion, 8*(3), 124-140. doi:10.1080/1754730X.2015.1037848

Elias MJ, Zins JE, Graczyk PA, Weissberg RP. Implementation, sustainability, and scaling up of social-emotional and academic innovations in public schools. School Psychology Review. 2003;32:303–19.

Fazel, M., Dr, Hoagwood, K., Prof, Stephan, S., PhD, & Ford, T., Prof. (2014). Mental health interventions in schools in high-income countries. *Lancet Psychiatry, The, 1*(5), 377-387. doi:10.1016/S2215-0366(14)70312-8

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., . . . Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. the adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine, 14*(4), 245. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9635069

Felitti, V. J., & Anda, R. F.The relationship of adverse childhood experiences to adult health status. Retrieved from https://www.acf.hhs.gov/sites/default/files/cb/nccan14_opening_plenary.pdf

Fixsen DL, Naoom SF, Blasé KA, Friedman RM, Wallace F. Implementation Research: A Synthesis of the Literature. Tampa: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network; 2005. (FMHI Publication #231)

Forman, S. G., Olin, S. S., Hoagwood, K. E., Crowe, M., & Saka, N. (2009). Evidence-based interventions in schools: Developers' views of implementation barriers and facilitators. *School Mental Health, 1*(1), 26.

Frambach, R. T., & Schillewaert, N. (2002). Organizational innovation adoption: A multi-level framework of determinants and opportunities for future research. *Journal of Business Research, 55*(2), 163-176.

Friend, S., Flattum, C. F., Simpson, D., Nederhoff, D. M., & Neumark-Sztainer, D. (2014). The researchers have left the building: What contributes to sustaining School-Based interventions following the conclusion of formal research support? *Journal of School Health, 84*(5), 326-333. doi:10.1111/josh.12149

Gallivan, M. J. (2001). Organizational adoption and assimilation of complex technological innovations: Development and application of a new framework. *ACM SIGMIS Database: The DATABASE for Advances in Information Systems, 32*(3), 51-85.

Gilstad-Hayden, K., Carroll-Scott, A., Rosenthal, L., Peters, S. M., McCaslin, C., & Ickovics, J. R. (2014). Positive school climate is associated with lower body mass

index percentile among urban preadolescents. *The Journal of School Health, 84*(8), 502-506. doi:10.1111/josh.12177

Glaser, B. G., & Strauss, A. L. (1967). The constant comparative method of qualitative analysis. *The Discovery of Grounded Theory: Strategies for Qualitative Research, 101*, 158.

Gordon Jr, R. S. (1983). An operational classification of disease prevention. *Public Health Reports, 98*(2), 107.

Gottfredson, G. D., Jones, E. M., & Gore, T. W. (2002). Implementation and evaluation of a cognitive-behavioral intervention to prevent problem behavior in a disorganized school. *Prevention Science: The Official Journal of the Society for Prevention Research, 3*(1), 43-56. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/12002558/

Graham, I. D., & Logan, J. (2004). Translating research-innovations in knowledge transfer and continuity of care. *Canadian Journal of Nursing Research Archive, 36*(2)

Grant, S., & Lappin, J. (2017). Childhood trauma: Psychiatry's greatest public health challenge? *The Lancet Public Health, 2*(7), e301. doi:10.1016/S2468-2667(17)30104-4

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *The Milbank Quarterly, 82*(4), 581-629. doi:10.1111/j.0887-378X.2004.00325.x

Gregory, A., Henry, D. B., & Schoeny, M. E. (2007). School climate and implementation of a preventive intervention. *American Journal of Community Psychology, 40*(3-4), 250-260. doi:10.1007/s10464-007-9142-z

Gregory, A., & Weinstein, R. S. (2004). Connection and regulation at home and in school: Predicting growth in achievement for adolescents. *Journal of Adolescent Research, 19*(4), 405-427. doi:10.1177/0743558403258859

Guyton, M., Iszard, S., Salmon, K. B., Sallee, W., & Nelson, D. (2017). *State board of education*
mental health committee:
Activities and recommendations. (). Retrieved from http://www.marylandpublicschools.org/stateboard/Documents/10242017/TabG-MentalHealthUpdate.pdf

Halpin, A. W., & Croft, D. B. (1962). *The organizational climate of schools* United States Office of Education, Department of Health, Education and Welfare.

Han, S. S., & Weiss, B. (2005). Sustainability of teacher implementation of school-based mental health programs. *Journal of Abnormal Child Psychology, 33*(6), 665-679. doi:10.1007/s10802-005-7646-2

Henggeler, S. W., Chapman, J. E., Rowland, M. D., Halliday-Boykins, C. A., Randall, J., Shackelford, J., & Schoenwald, S. K. (2008). Statewide adoption and initial implementation of contingency management for substance-abusing adolescents. *Journal of Consulting and Clinical Psychology, 76*(4), 556-567. doi:10.1037/0022-006X.76.4.556

Hoagwood, K., & Johnson, J. (2003). School psychology: A public health framework: I. from evidence-based practices to evidence-based policies. *Journal of School Psychology, 41*(1), 3-21.

Hoover, S. A. (2019). *Policy and practice for trauma-informed schools.* (No. 19).National Association of State Boards of Education. Retrieved from https://eric.ed.gov/?id=EJ1203428

Hosmer Jr, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* John Wiley & Sons.

Hwang, S. (2008). Utilizing qualitative data analysis software: A review of atlas.ti. *Social Science Computer Review, 26*(4), 519-527. doi:10.1177/0894439307312485

Jacoby, W. G. (2000). Loess:: A nonparametric, graphical tool for depicting relationships between variables. *Electoral Studies, 19*(4), 577-613.

Larson, S., Chapman, S., Spetz, J., & Brindis, C. D. (2017). Chronic childhood trauma, mental health, academic achievement, and school-based health center mental health services. *The Journal of School Health, 87*(9), 675-686. doi:10.1111/josh.12541

Lyon, A. R. (n.d.). *Implementation science and practice in the education sector*. Retrieved from https://education.uw.edu/sites/default/files/Implementation%20Science%20Issue%20Brief%20072617.pdf

Lyon, A. R., Cook, C. R., Brown, E. C., Locke, J., Davis, C., Ehrhart, M., & Aarons, G. A. (2018). Assessing organizational implementation context in the education sector: Confirmatory factor analysis of measures of implementation leadership, climate, and citizenship. *Implementation Science : IS, 13* doi:10.1186/s13012-017-0705-6

Lytle, L. A., Ward, J., Nader, P. R., Pedersen, S., & Williston, B. J. (2003). Maintenance of a health promotion program in elementary schools: Results from the CATCH-ON study key informant interviews. *Health Education & Behavior: The Official Publication of the Society for Public Health Education, 30*(4), 503-518. doi:10.1177/1090198103253655

Macmillan, R., & Hagan, J. (2004). Violence in the transition to adulthood: Adolescent victimization, education, and socioeconomic attainment in later life. *Journal of Research on Adolescence, 14*(2), 127-158. doi:10.1111/j.1532-7795.2004.01402001.x

Madhani, A. (2018). Baltimore is the nation's most dangerous city. USA Today. Retrieved from: https://www.usatoday.com/story/news/2018/02/19/homicides-toll-big-u-s-cities-2017/302763002/

Magruder, K. M., McLaughlin, K. A., & Elmore Borbon, D. L. (2017). Trauma is a public health issue. *European Journal of Psychotraumatology, 8*(1) doi:10.1080/20008198.2017.1375338

Malterud, K. (2001). Qualitative research: Standards, challenges, and guidelines. *The Lancet, 358*(9280), 483-488.

Maryland State Department of Education (2017). Data Downloads. Retrieved from: http://reportcard.msde.maryland.gov/downloadindex.aspx?K=99AAAA

Maryland State Department of Education (2016). Maryland Public School Suspensions by School and Major Offense Category In-School and Out-of-School Suspensions and Expulsions, 2015-2016. Retrieved from: http://www.marylandpublicschools.org/about/Documents/DCAA/SSP/20152016Student/20152016SuspensionsbySchoolCombinded.pdf

McDonald, J. H. (2015). Multiple logistic regression. Retrieved from http://www.biostathandbook.com/multiplelogistic.html

McKay, M. M., Hibbert, R., Hoagwood, K., Rodriguez, J., Murray, L., Legerski, J., & Fernandez, D. (2004). Integrating evidence-based engagement interventions into "real world" child mental health settings. *Brief Treatment and Crisis Intervention, 4*(2), 177-186. doi:10.1093/brief-treatment/mhh014

Mendelson, T., Tandon, S. D., O'Brennan, L., Leaf, P. J., & Ialongo, N. S. (2015). Brief report: Moving prevention into schools: The impact of a trauma-informed school-

based intervention. *Journal of Adolescence, 43*, 142-147. doi:10.1016/j.adolescence.2015.05.017

Mermin, N. D. (2005). Proper citation of the matthew effect. *Physics Today, 58*(4), 17.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass Publishers.

Metzler, M., Merrick, M. T., Klevens, J., Ports, K. A., & Ford, D. C. (2017). Adverse childhood experiences and life opportunities: Shifting the narrative. *Children and Youth Services Review, 72*, 141-149. doi:10.1016/j.childyouth.2016.10.021

Meyer, A. D., & Goes, J. B. (1988). Organizational assimilation of innovations: A multilevel contextual analysis. *Academy of Management Journal, 31*(4), 897-923.

Miles, M. B., Huberman, A. M., Huberman, M. A., & Huberman, M. (1994). *Qualitative data analysis: An expanded sourcebook* sage.

Murphy, J. M., Abel, M. R., Hoover, S., Jellinek, M., & Fazel, M. (2017). Scope, scale, and dose of the world's largest school-based mental health programs. *Harvard Review of Psychiatry, 25*(5), 218-228. doi:10.1097/HRP.0000000000000149

Nadeem, E., & Ringle, V. (2016). De-adoption of an evidence-based trauma intervention in schools: A retrospective report from an urban school district. *School Mental Health, 8*(1), 132-143. doi:10.1007/s12310-016-9179-y

National Center on Safe Supportive Learning Environments. (2019). School climate. Retrieved from https://safesupportivelearning.ed.gov/safe-and-healthy-students/school-climate

National School Climate Center.What is school climate and why is it important? Retrieved from https://www.schoolclimate.org/school-climate

O'Connell, M. E., Boat, T., & Warner, K. E. (2009). National research council (US) and institute of medicine (US) committee on the prevention of mental disorders and substance abuse among children, youth and young adults. preventing mental, emotional, and behavioral disorders among young people: Progress and possibilities. *Preventing Mental, Emotional, and Behavioral Disorders among Young People: Progress and Possibilities,*

Owens, J., Lyon, A., Brandt, N., Masia Warner, C., Nadeem, E., Spiel, C., & Wagner, M. (2014). Implementation science in school mental health: Key constructs in a developing research agenda. *School Mental Health, 6*(2), 99-111. doi:10.1007/s12310-013-9115-3

Owens, R. G. (2004). Organizational behavior in education: Adaptive leadership and school reform.

Pankratz M., Hallfors D., Cho H. (2002). Measuring perceptions of innovation adoption: the diffusion of a federal drug prevention policy. Health Education Research. 17:315–26.

Patton, M. Q. (2002). Qualitative research and evaluation methods. thousand oaks. *Cal.: Sage Publications,*

Perc, M. (2014). The matthew effect in empirical data. *Journal of the Royal Society Interface, 11*(98) doi:10.1098/rsif.2014.0378

Peterson, C., Florence, C., & Klevens, J. (2018). The economic burden of child maltreatment in the united states, 2015. *Child Abuse & Neglect, 86*, 178-183. doi:10.1016/j.chiabu.2018.09.018

Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., . . . Hensley, M. (2011). Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health, 38*(2), 65-76. doi:10.1007/s10488-010-0319-7

Ringeisen, H., Henderson, K., & Hoagwood, K. (2003). Context matters: Schools and the" research to practice gap" in children's mental health. *School Psychology Review, 32*(2), 153-169.

Ringwalt, C. L., Ennett, S., Johnson, R., Rohrbach, L. A., Simons-Rudolph, A., Vincus, A., & Thorne, J. (2003). Factors associated with fidelity to substance use prevention curriculum guides in the nation's middle schools. *Health Education & Behavior: The Official Publication of the Society for Public Health Education, 30*(3), 375-391. doi:10.1177/1090198103030003010

Scott, S. D., Estabrooks, C. A., Allen, M., & Pollock, C. (2008). A context of uncertainty: How context shapes nurses' research utilization behaviors. *Qualitative Health Research, 18*(3), 347-357.

Shepardson, R. L., Funderburk, J. S., & Weisberg, R. B. (2016). Adapting evidence-based, cognitive-behavioral interventions for anxiety for use with adults in integrated primary care settings. *Families, Systems, & Health, 34*(2), 114-127. doi:10.1037/fsh0000175

Shinn, M. (2003). Understanding implementation of programs in multilevel systems. *Prevention & Treatment, 6*(1), No Pagination Specified. doi:10.1037/1522-3736.6.1.622c

Slopen, Shonkoff, Albert, Yoshikawa, Jacobs, Stoltz, & Williams. (2016). Racial disparities in child adversity in the U.S.: Interactions with family immigration history and income.

Sperandei, S. (2014). Understanding logistic regression analysis. *Biochemia Medica, 24*(1), 12-18. doi:10.11613/BM.2014.003

StataCorp, L. P. (2015). StataCorp [computer software]. College Station, TX.

Substance Abuse and Mental Health Services Administration, & National Child Traumatic Stress Network. (2015). Understanding child trauma. Retrieved from https://www.samhsa.gov/sites/default/files/programs_campaigns/nctsi/nctsi-infographic-full.pdf

Suldo, S. M., Gormley, M. J., DuPaul, G. J., & Anderson-Butcher, D. (2014). The impact of school mental health on student and school-level academic outcomes: Current status of the research and future directions. *School Mental Health, 6*(2), 84-98. doi:10.1007/s12310-013-9116-2

Taber, K. S. (2018). The use of cronbach's alpha when developing and reporting research instruments in science education. Research in Science Education, 48(6), 1273-1296. doi:10.1007/s11165-016-9602-2

Tavakol, M., & Dennick, R. (2011). Making sense of cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. doi:10.5116/ijme.4dfb.8dfd

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research, 83*(3), 357-385.

Tibbits, M. K., Bumbarger, B. K., Kyler, S. J., & Perkins, D. F. (2010). Sustaining evidence-based interventions under real-world conditions: Results from a large-scale diffusion project. *Prevention Science: The Official Journal of the Society for Prevention Research, 11*(3), 252-262. doi:10.1007/s11121-010-0170-9

Tolan, P., Gorman-Smith, D., & Henry, D. (2004). Supporting families in a high-risk setting: Proximal effects of the SAFEChildren preventive intervention. *Journal of Consulting and Clinical Psychology, 72*(5), 855-869. doi:10.1037/0022-006X.72.5.855

U.S. Census (2017). QuickFacts Baltimore City, Maryland. Retrieved from: https://www.census.gov/quickfacts/fact/table/baltimorecitymaryland,US/AGE295216#viewtop

U.S. Department of Education. Baltimore city public schools (n.d.). Retrieved from https://www.ed.gov/labor-management-collaboration/conference/baltimore-city-public-schools

US Department of Education (2018). School Climate. National Center on Safe and Supportive Learning Environments. Retrieved from: https://safesupportivelearning.ed.gov/safe-and-healthy-students/school-climate

U.S. Department of Education. (2017). The federal role in education (n.d.); Retrieved from https://www2.ed.gov/about/overview/fed/role.html

Valente, T. W. (1996). Social network thresholds in the diffusion of innovations. *Social Networks, 18*(1), 69-89.

Vestal, C. (2018, June 23,). States begin requiring mental health education in schools Retrieved from https://namivirginia.org/states-begin-requiring-mental-health-education-schools/

Vona, P., Baweja, S., Santiago, C. D., Pears, G., Langley, A., & Kataoka, S. (2018). A cross-site partnership to examine implementation and sustainability of a school-based trauma program. *Ethnicity & Disease, 28*(Suppl 2), 427-436. doi:10.18865/ed.28.S2.427

Wiltsey Stirman, S., Kimberly, J., Cook, N., Calloway, A., Castro, F., & Charns, M. (2012). The sustainability of new programs and innovations: A review of the empirical literature and recommendations for future research. *Implementation Science: IS, 7*, 17. doi:10.1186/1748-5908-7-17

Wisdom, J. P., Chor, K. H. B., Hoagwood, K. E., & Horwitz, S. M. (2014). Innovation adoption: A review of theories and constructs. *Administration and Policy in Mental Health, 41*(4), 480-502. doi:10.1007/s10488-013-0486-4

Yazan, B. (2015). Three approaches to case study methods in education: Yin, merriam, and stake. *The Qualitative Report, 20*(2), 134-152. Retrieved from https://nsuworks.nova.edu/tqr/vol20/iss2/12

Yin, R. K. (2003). *Case study research : Design and methods*. Thousand Oaks, Calif.: Sage Publications.

Yin, R. K. (2011). *Qualitative research from start to finish*. New York, NY, US: The Guilford Press.

Zinzow, H. M., Ruggiero, K. J., Resnick, H., Hanson, R., Smith, D., Saunders, B., & Kilpatrick, D. (2009). Prevalence and mental health correlates of witnessed parental and community violence in a national sample of adolescents. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 50*(4), 441-450. doi:10.1111/j.1469-7610.2008.02004.x

KIMBERLY T. ARNOLD, MPH
Current Address: 212 Washington Avenue, # 409, Towson, MD 21204
Email Address: karnol14@jhu.edu
Birthplace: Greenville, SC; Birthdate: September 1, 1990

CURRICULUM VITAE

EDUCATION

Doctor of Philosophy in Health and Public Policy Candidate
Degree Expected August 2019
Johns Hopkins University, Bloomberg School of Public Health, Baltimore, MD

Doctoral thesis title: "Examining Factors that Influence the Adoption and Sustainability of a Trauma-Informed Universal Mental Health Intervention in Baltimore City Public Schools"

Thesis Advisory Committee: Keshia Pollack Porter, PhD, MPH (Advisor), Tamar Mendelson, PhD, Shannon Frattaroli, PhD, MPH, Rachel Durham, PhD

Master of Public Health in Health Policy and Management
June 2014
Drexel University, Dornsife School of Public Health and Human Rights, Philadelphia, PA

Community-Based Master's Project title: "The Impact of Adverse Childhood Experiences on Educational Attainment among Mothers Reporting Household Food Insecurity"
Advisor: Mariana Chilton, PhD, MPH

Bachelor of Arts in Biology
May 2012
College of Charleston, School of Sciences and Mathematics, Charleston, SC
Minors: African American Studies, Health

TRAINING AND CERTIFICATIONS

2017-2019 Mental Health Services and Systems, Implementation Science Track
National Institute of Mental Health-funded T32 Predoctoral Training Program

2017-2018 Certification in Community-Based Public Health
Johns Hopkins Bloomberg School of Public Health

2013 Opening the Doors for Diverse Populations to Health Disparities Research
National Institute of Minority Health and Health Disparities-funded R25 Training Program

PUBLICATIONS

Peer-Reviewed Journal Articles

Barry CL, Bandara S, **Arnold KT**, Pintor JK, Baum LM, Niederdeppe J, Karaca-Mandic P, Franklin Fowler E, Gollust SE (2018). Assessing the Content of Television Health Insurance Advertising during Three Open Enrollment Periods of the ACA. *Journal of Health Politics, Policy and Law,* 961-989. *https://doi.org/10.1215/03616878-7104392*

Vaughn NA, Brown D, Reyes BO, Wyatt C, **Arnold KT**, Dalianis E, Kalksma PJ, Roth C, Langheier J, Pajil-Battle M, Grant M (2018). A 40-Day Journey to Better Health: Utilizing the DanielFast to Improve Health Outcomes in Urban Church-Based Settings. *Healthcare*, *6*(1), 25. http://doi.org/10.3390/healthcare6010025

Chilton M, Knowles M, Rabinowich J, & **Arnold KT**. (2015). The relationship between childhood adversity and food insecurity: 'It's like a bird nesting in your head'. *Public Health Nutrition*, *18*(14), 2643-2653. https://doi.org/10.1017/S1368980014003036

Under Review

Umstattd Meyer MR, Bridges CN, Prochnow T, McClendon ME, Carlton T, **Arnold KT**, Wilkins E, Benavidez G, Williams TD, Abildso CG, & Pollack Porter KM. Come together, play, be active: Physical activity engagement of school-age children at Play Streets in four diverse rural communities in the U.S. *Preventive Medicine*.

Umstattd Meyer MR, Prochnow T, Bridges CN, Carlton T, Wilkins E, **Arnold KT**, McClendon ME, McKenzie T, & Pollack Porter KM. Measuring activity in temporary play spaces: Application of SOPARC/ iSOPARC® for Play Streets. *Research Quarterly for Exercise and Sport*.

Bever E, **Arnold KT**, Lindberg R, Dannenberg AL, Morley R, Breysse J, Pollack Porter K. Use of Health Impact Assessments in the Housing Sector to Promote Health in the United States, 2002-2016. *Journal of Housing and Community Development.*

Other Articles not Peer-Reviewed

LaVeist TA, **Arnold KT**, Thorpe RJ. (2017). A review of economic opportunity and criminal justice interventions for boys and men of color. White paper. RISE for Boys and Men of Color. https://www.issuelab.org/resource/a-review-of-economic-opportunity-and-criminal-justice-programs-for-boys-and-men-of-color.html

RESEARCH AND CONSULTING EXPERIENCE

Research Assistant, Department of Mental Health
January 2019 –
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Assisting Principal Investigator (PI: Sabriya Linton, PhD) and research team with multiple methods study on the health impacts of gentrification on African Americans in Atlanta, GA
- Identifying and recruiting community stakeholders in Atlanta from various sectors including health, education, criminal justice, housing and other social services
- Interviewing public service providers about community-level health impacts of gentrification in Atlanta
- Coding and analyzing interview transcripts

Research Assistant, Department of Mental Health
August 2018 – November 2018
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Assisted Principal Investigator (PI: Tamar Mendelson, PhD) and research team with implementation of a trauma-informed universal mental health intervention in Baltimore City public schools
- Delivered trauma-informed universal mental health intervention to over 25 eighth graders in Baltimore City public schools that have predominantly African American and Latinx students
- Monitored fidelity of the intervention by videotaping and completing fidelity logs for each session
- Participated in weekly supervision calls to discuss implementation strengths and challenges

Data Analyst, Department of Mental Health
June 2018 – September 2018
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Assisted Principal Investigator (PI: Holly Wilcox, PhD) and research team with preliminary analysis of the California Health Interview Survey to assess trends in suicide ideation and attempts among Latino immigrant families before and after the 2016 presidential election.

RESEARCH AND CONSULTING EXPERIENCE (CONTINUED)

Research Assistant, Hopkins Center for Health Disparities Solutions, Department of Health Policy and Management
November 2015 –
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Collected survey data for "Prime Time Sister Circles" study which seeks to prevent and reduce cardiovascular disease among low-income African American women in Washington, DC (Co-PIs: Darrell Gaskin, PhD and Chidinma Ibe, PhD)
- Conducted literature review of criminal justice and economic opportunity interventions for boys and men of color and prepared white paper for RISE Men and Boys of Color publication (PI: Thomas LaVeist, PhD)
- Identified validated instruments for Black Men's Health Project survey (http://blackmenshealthproject.org/) (Co-PIs: Thomas LaVeist, PhD and Roland J. Thorpe, Jr., PhD)
- Edited and revised Black Men's Health Study survey
- Extracted data from health department and federal public health agencies and created graphs and charts for use in research presentations and reports

Research Assistant, Department of Health Policy and Management
May 2017 – August 2017
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Assisted Principal Investigators (Co-PIs: Keshia Pollack Porter, PhD, MPH and Renée Umstattd Meyer, PhD) and research team from Johns Hopkins and Baylor University with study focused on implementation of Play Streets (temporary recreational spaces) in diverse low-income rural communities in North Carolina, Maryland, Texas, and Oklahoma
- Collected observation data using iSOPARC app at 8 Play Streets events (4 in Warrenton, NC and 4 in Oakland, MD)
- Collected pedometer data from youth
- Administered surveys to youth
- Co-authored manuscripts

RESEARCH AND CONSULTING EXPERIENCE (CONTINUED)

Research Assistant/Consultant, Department of Health Policy and Management
June 2016 – April 2017
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- Assisted Principal Investigators (Co-PIs: Sarah E. Gollust, PhD and Erika Franklin Fowler, PhD; Collaborators: Colleen Barry, PhD, MPP, Laura M. Baum, MURP, Jeff Niederdeppe, PhD, MA and Pinar Karaca-Mandic, PhD) and interdisciplinary research team from Johns Hopkins, Drexel, Cornell, Wesleyan, and University of Minnesota with a quantitative media content analysis of health insurance ads funded by the Robert Wood Johnson Foundation
- Developed coding instrument for the study with research team members
- Pilot coded 40 health insurance ads to refine data collection instrument and ensure consistent coding across independent coders
- Coded 350 health insurance ads
- Co-authored manuscript

Research Assistant, Poverty and Inequality Research Lab
June 2016 – April 2017
Department of Sociology, Johns Hopkins University, Baltimore, MD

- Assisted Principal Investigator (PI: Stephanie DeLuca, PhD) and research team with qualitative research study funded by the Abell Foundation
- Used various forms of communication (calls, texts, emails, door knocking) to recruit participants
- Interviewed mothers and children that are recipients of a housing mobility program about neighborhood and school experiences in Baltimore City compared to surrounding counties in Maryland
- Coded interview transcripts using MAXQDA 11

Consultant, Department of Health Policy and Management
November 2015 – January 2016
Johns Hopkins Bloomberg School of Public Health and the Baltimore Curriculum Project, Baltimore, MD

- Interviewed school social workers, guidance counselors, and teachers with team members to evaluate mental health policies and programs within 2 of 4 Baltimore Curriculum Project charter schools.
- Developed and disseminated recommendations with team members based on interview results to BCP leadership to improve school mental health services.

RESEARCH AND CONSULTING EXPERIENCE (CONTINUED)

Project Coordinator of Faith, Activity, and Nutrition, Prevention Research Center
December 2014 – August 2015
Arnold School of Public Health, University of South Carolina, Columbia, SC

- Assisted Principal Investigator (PI: Sarah Wilcox, PhD) and research team with cluster randomized controlled trial of a physical activity and nutrition intervention that targets environmental, systems, and policy changes within churches in underserved SC communities
- Coordinated communications and activities between the USC Prevention Research Center, Fairfield Behavioral Health Services, and local churches to ensure implementation of research activities
- Managed the screening, recruitment, and enrollment of 70 Fairfield County churches into the study
- Managed, organized, and planned church recruitment activities
- Developed church recruitment materials including letters, flyers, and media ads
- Created culturally competent health promotion training modules for Community Health Advisors
- Performed data entry and data management activities using Microsoft Excel and Microsoft Access

Research Assistant, Center for Hunger-Free Communities
September 2013 – June 2014
Dornsife School of Public Health, Drexel University, Philadelphia, PA

- Assisted Principal Investigator (PI: Mariana Chilton, PhD, MPH) and research team with qualitative study funded by USDA and University of Kentucky Center for Poverty Research
- Administered surveys to and conducted qualitative interviews with diverse mothers of young children
- Completed literature review on association of childhood trauma with educational attainment, adult socioeconomic status, food insecurity, and participation in public assistance programs
- Cleaned, entered and analyzed survey data using SPSS and interview transcripts using ATLAS.ti
- Devised trauma-informed public policy recommendations based on research results
- Worked with PI and research team to complete technical report for funders
- Prepared manuscripts for publication (including tables, figures, and reference lists)

RESEARCH AND CONSULTING EXPERIENCE (CONTINUED)

Research Assistant, Opening Doors Health Disparities Research Training Program
January 2013 – August 2013
Dornsife School of Public Health, Drexel University, Philadelphia, PA

- Assisted Principal Investigator (PI: Nicole Vaughn, PhD) and research team with program evaluation funded by Amerihealth, and first phase of a health behavior change intervention using a community-based participatory research approach funded by United Health Foundation and Comcast Corporation
- Worked with research team to recruit over 200 participants from 4 Philadelphia churches
- Administered and collected health behavior and program evaluation surveys
- Cleaned, verified, and entered data into SPSS for PI
- Facilitated diabetes prevention classes at a church in West Philadelphia
- Compiled and submitted weekly field reports
- **Participated in Summer Weekly Training Seminars:** Mixed Research Methods; How to Work with Communities; Professionalism and Leadership; Conducting Health Disparities Research; Exploring Health Disparities Careers; Preparing Articles, Grants, and Professional Presentations

HONORS AND AWARDS

Early Career Prevention Network Poster Student Poster Contest Winner
2019

- Early Career Prevention Network, Society of Prevention Research (SPR). One of three posters selected as 1st place winners from over 100 submissions for presentation, "Examining Factors That Influence the Adoption of a Trauma-Informed Universal Mental Health Intervention in Baltimore City Public Schools." Awarded $250 travel award to attend the 27th SPR Annual Meeting and free 1-year membership in the Society of Prevention Research

Early Career Prevention Network Travel Award
2019

- Early Career Prevention Network, Society of Prevention Research. Awarded $400 to attend the 27th SPR Annual Meeting to present dissertation research and network with early career prevention scientists

Education and Service Award
2018

- Pleasant Hope Baptist Church, Baltimore MD. Awarded $500 scholarship for academic achievement and service in Pleasant Hope Baptist

APPAM Student Spotlight
2017

- Association of Public Policy Analysis and Management. Selected for dedication to the public policy profession and for being a steward of APPAM's mission

HONORS AND AWARDS (CONTINUED)

Urban Planning Pre-Doctoral Summer Workshop for Students of Color
2014

- University of California-Los Angeles Luskin School of Public Affairs and University of Southern California Sol Price School of Public Policy, Los Angeles, CA. Highly competitive week-long program to prepare qualified students of color for PhD application process

Public Health Poster Award
2014

- College of Physicians of Philadelphia. 1 of 4 winners out of 72 submissions for presentation, "Childhood Stress: The Impact of Adverse Childhood Experiences on Educational Attainment among Food Insecure Families." Awarded $100 and opportunity to shadow a local public health professional

Certificate of Academic Excellence
2012

- College of Charleston, Multicultural Student Programs and Services. In recognition of exemplary academic achievement at the College of Charleston

Outstanding Student Service Award
2012

- College of Charleston, African American Studies Program. Awarded in recognition of service to improve the campus and broader community with respect to issues around racial equality and social justice

1st Place Undergraduate Social and Behavioral Science Poster Award
2011

- Medical University of South Carolina, Annual Perry V. Halushka Student Research Day. For presentation, "Association of Willingness to Participate in Research Studies with Payment, Risk, and Time Among Individuals with Type 2 Diabetes." Awarded $500

Ronald E. McNair Postbaccalaureate Achievement Scholarship
2010-2012

- College of Charleston. Prepares students of color from disadvantaged backgrounds with strong academic potential for doctoral studies

South Carolina Legislative Initiative for Future Excellence Enhancement Scholarship
2009-2012

- College of Charleston. Merit-based scholarship awarded to students majoring in science or mathematics

HONORS AND AWARDS (CONTINUED)

Lettie Pate Whitehead Scholarship
2009-2012

- College of Charleston. Financial need-based scholarship awarded to female students interested in medical, allied or public health careers

South Carolina Louis Stokes Alliance for Minority Participation Scholarship
2008-2012

- College of Charleston. Merit-based scholarship awarded to students of color majoring in science, technology, engineering or mathematics

Presidential Scholarship
2008-2012

- College of Charleston. Awarded to incoming freshmen with high academic achievement

Avery Research Center for African American History and Culture Scholarship
2008-2012

- College of Charleston. Merit-based scholarship awarded to students of color that are first generation and/or from an economically disadvantaged background

Gates Millennium Scholarship
2008-2019

- Bill and Melinda Gates Foundation. Highly competitive scholarship awarded to students of color from low-income background that have a stellar academic record and demonstrated involvement in community service and leadership activities.

INVITED RESEARCH PRESENTATIONS

Invited Speaker, "Examining Factors that Influence the Adoption and Sustainability of a Trauma-Informed Universal Mental Health Intervention in Baltimore City Public Schools," Penn Center for Mental Health, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, December 11, 2018.

Invited Speaker, "Disparities in Child and Adolescent Mental Health and Mental Health Services in the US," Hopkins Center for Health Disparities Solutions Fall Seminar Series, Johns Hopkins Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, December 10, 2018.

CONFERENCE PRESENTATIONS

Oral Presentations

Arnold KT and Mawla J. 2014. "Examining the Effects of Food Tracking and Physical Activity on Weight Loss among Getting People in Sync (GPS) Prediabetes Program Participants." **Society of Behavioral Medicine**, Philadelphia, PA.

Arnold KT. 2013. "Examining the Effects of Food Tracking on Weight Loss among Getting People in Sync (GPS) Prediabetes Program Participants." Identities and Inequalities in a Globalizing World Graduate Conference, **University of South Florida**, Tampa, FL.

Arnold KT. 2010. "High Rate of African Americans with Diabetes: An Issue of Healthcare Access?" South Carolina Louis Stokes Alliance for Minority Participation Research Night, **College of Charleston**, Charleston, SC. Ronald E. McNair Post-baccalaureate Achievement Program Student Research Day, **College of Charleston**, Charleston, SC.

Poster Presentations

Arnold KT, Pollack Porter K, Clary L, Frattaroli S, Durham R, Mendelson T. 2019. "Examining Factors That Influence the Sustainability of a Trauma-Informed Universal Mental Health Intervention in a Large Urban School District." **American Public Health Association**, Philadelphia, PA. (Abstract accepted for presentation in November)

Arnold KT, Clary L, Mendelson T. 2019. "Examining Factors That Influence the Adoption of a Trauma-Informed Universal Mental Health Intervention in Baltimore City Public Schools." **Society for Prevention Research**, San Francisco, CA.

Arnold KT. 2014. "Childhood Stress: The Impact Of Adverse Childhood Experiences on Educational Attainment among Food Insecure Families." **American Public Health Association**, New Orleans, LA.

Arnold KT. 2014. "Best Practices for Increasing Dietary Self-Monitoring among Getting People In Sync (GPS) Prediabetes Program Participants." **American Public Health Association**, New Orleans, LA.

Arnold KT. 2014. "Childhood Stress: The Impact Of Adverse Childhood Experiences on Educational Attainment among Food Insecure Families." **College of Physicians of Philadelphia**, Philadelphia, PA.

Arnold KT. 2014. "Examining the Effects of Food Tracking on Weight Loss among Getting People in Sync (GPS) Prediabetes Program Participants." IvyPlus Symposium, **Harvard University**, Cambridge, MA.

CONFERENCE PRESENTATIONS (CONTINUED)

Arnold KT. 2012. "Association of Willingness to Participate in Research Studies with Payment, Risk, and Time Among Individuals with Type 2 Diabetes." Department of Medicine Research Day, **Medical University of South Carolina**, Charleston, SC.

Arnold KT. 2011. "Association of Willingness to Participate in Research Studies with Payment, Risk, and Time Among Individuals with Type 2 Diabetes." Perry V Halushka Student Research Day, **Medical University of South Carolina**, Charleston, SC.
Diabetes Fall Symposium for Primary Health Care Professionals, Charleston Convention Center, Charleston, SC.

Arnold KT. 2010. "High Rate of African Americans with Diabetes: An Issue of Healthcare Access?" Summer Research Poster Session at the **College of Charleston**, Charleston, SC.

PROFESSIONAL MEMBERSHIPS

Society for Prevention Research 2019-
Society for the Analysis of African American Public Health Issues 2018-
Association for Public Policy Analysis and Management 2015-

- 2018 DC Regional Student Conference Steering Committee Member
- 2017 DC Regional Student Conference
  - Steering Committee Member
  - Co-Moderator for Workshops on Policy Career Paths and Presentation Skills
- 2016 Summer Student Brown Bag Social Media Volunteer
- 2016 Spring Conference Volunteer

National Center for Faculty Development & Diversity 2015-
South Carolina Public Health Association 2014-2015
American Public Health Association 2013-

OTHER LEADERSHIP AND PROFESSIONAL ACTIVITIES

2019 Nonprofit Board of Directors Leadership Training Program,
Associated Black Charities, Baltimore, MD

2018 Association of Schools and Programs of Public Health Student Leadership Institute, San Diego, CA

2018 Institute on Teaching and Mentoring,
The Compact for Faculty Diversity, Arlington, VA

2016 Institute on Teaching and Mentoring,
The Compact for Faculty Diversity, Tampa, FL

OTHER LEADERSHIP AND PROFESSIONAL ACTIVITIES (CONTINUED)

2015 Institute on Teaching and Mentoring,
The Compact for Faculty Diversity, Arlington, VA

2013 Association of Schools and Programs of Public Health Student Leadership Institute*,* Boston, MA

2013 Millennial Health Leaders Summit,
Centers for Disease Control and Prevention, Atlanta, GA

2012 Leadership CofC, Competitive Leadership Development Program, College of Charleston, Charleston, SC

COMMUNITY ENGAGEMENT AND VOLUNTEER EXPERIENCE

Grant Specialist, Pleasant Hope Baptist Church, Baltimore, MD
2018-

- Wrote and edited two grants (including budgets) that resulted in $30,000 of funding for young adult leadership and community development programs
- Co-authored and submitted interim grant report
- Oversee program planning activities associated with grants
- Conduct grant-related budget and evaluation activities
- Identify and research potential grant opportunities
- Manage submission deadlines

Member, Fairfield Community Coordinating Council, Winnsboro, SC
2015

- Community organization that promotes community engagement and multi-sector collaboration
- Facilitated the exchange of information and ideas on health and human services programs
- Identified issues in the local community and collaboratively devised solutions

Project Coordinator of Youth Seeking Health in Nutrition and Exercise,
PA State Baptist Convention & Church of the Redeemer Baptist Church Health Exposition, Philadelphia, PA
2013-2014

- Planned and delivered 3 health promotion workshops for state and local youth in faith-based settings
- Selected and taught physical activity and nutrition curriculum for youth ages 5-17
- Developed project budget
- Managed team of 3 students

COMMUNITY ENGAGEMENT AND VOLUNTEER EXPERIENCE (CONTINUED)

Program Planning Intern and Volunteer Computer Literacy Instructor, Investing in Ourselves Nonprofit Organization, Philadelphia, PA
2013

- Developed a community garden in a food desert in West Philadelphia with food insecure community residents
- Devised a combined gardening and nutrition curriculum
- Taught participants nutritional benefits of vegetables, fruits, and spices grown in the garden
- Developed and taught computer literacy lessons to older adults about how to use the Internet, email, social media, Dropbox, and Microsoft Office Suite

Diabetes Prevention Program Facilitator, Getting People in Sync Prediabetes Program, Drexel University Dornsife School of Public Health, Philadelphia, PA
2013-2014

- Facilitated weekly diabetes prevention classes in 2 Philadelphia churches
- Taught nutrition and physical activity curriculum
- Developed and instructed dietary self-monitoring lesson for facilitator trainings and intervention classes
- Prepared and submitted weekly project field reports

COMMUNITY PRESENTATIONS

2016 Keynote Speaker, "Networking and Interviewing Skills," Women in Transition from Foster Care, Baltimore, MD

2014 Keynote Speaker, "Preventing Chronic Diseases," Wayman Chapel, Annual Health Sunday, Sumter, SC

TEACHING EXPERIENCE

Robert Wood Johnson Foundation/George Washington University
Health Policy Research Scholars Fellowship Program
Teaching Assistant, Introduction to Health Policy
Fall 2016-Spring 2018

- Assisted HPRS Director Thomas LaVeist, PhD and Executive Director Lydia Isaac, PhD, MS with the development of the course syllabus, discussion guides for scholars based on course material, and course website management
- Conducted literature searches and secured readings for participating scholars
- Compiled and graded assignments for 80 doctoral scholars across two cohorts of the program
- Served as panelist judge for group health policy proposal presentations

TEACHING EXPERIENCE (CONTINUED)

Johns Hopkins University, Bloomberg School of Public Health
Standard Courses for Full- or Part-time Students
Executive Teaching Assistant, Critical Issues in Health Disparities
Fall 2017- Spring 2018
Course Instructor: Roland J. Thorpe, Jr., PhD

- Developed themes for 4 terms of the course: Rural Health Disparities in the US, Rural Health Disparities Outside the US, Urban Health Disparities in Hyper-segregated Cities in the US, Urban Health Disparities Outside the US
- Prepared and delivered first lecture each term on health disparities
- Helped design conference-style course format for student presentations of research articles relevant to course themes
- Approved topics for student presentations each term
- Evaluated over 60 student research presentations across all 4 terms of course
- Managed course website

Teaching Assistant, Introduction to Comparative and Effectiveness Research
Fall 2017
Course Instructor: Jodi Segal, MD, MPH

- Graded over 30 midterm and over 30 final exams
- Assisted with course website management

Teaching Assistant, Introduction to Health Policy
Fall 2017
Course Instructor: Sosena Kebede, MD, MPH

- Graded 20 final papers and 20 final exams
- Assisted with course website management

Teaching Assistant, Public Health Policy
Summer 2017
Course Instructor: Gerard F. Anderson, PhD

- Graded over 60 literature synthesis and final papers that applied the Bardach model to health policy issues
- Communicated with guest lecturers and coordinated course lectures
- Mentored students during office hours

Teaching Assistant, Seminar in Health Disparities
Fall 2016, Fall 2017
Course Instructors: Darrell Gaskin, PhD and Roland J. Thorpe, Jr., PhD

- Graded over 40 literature reviews each term on topics relevant to health disparities (8-12 pages each)
- Assisted undergraduate and graduate students with literature review assignment during office hours

TEACHING EXPERIENCE (CONTINUED)

Johns Hopkins University, Bloomberg School of Public Health
Standard Courses for Full- or Part-time Students
Teaching Assistant, The Tools of Public Health Practice
Summer 2018, 2017, 2016; Spring 2018
Course Instructors: Beth Resnick, DrPH, MPH and Paulani Mui, MPH

- Graded over 200 final course papers (6-10 pages each) on public health competencies
- Managed course website and email

Grading Teaching Assistant, Public Health Policy
Summer 2016
Course Instructor: Gerard F. Anderson, PhD

- Graded 27 literature synthesis assignments (4 pages each) written by master's students
- Graded 27 final course papers (8 pages each) on various public health policy issues

Teaching Assistant, Fundamentals of Health Policy and Management
Spring 2016
Course Instructor: Gerard F. Anderson, PhD

- Explained challenging health policy and management concepts to 25 undergraduate
  students in 16 weekly lab sessions (45 minutes – 1 hour each)
- Devised and led weekly activities relevant to course objectives
- Evaluated weekly written assignments, midterm and final exams
- Met individually with students about course material and advised students about public health & medical career planning

Johns Hopkins University, Bloomberg School of Public Health
Summer and Winter Institute Courses for Non-Degree Seeking Working Professionals and Enrolled Students
Teaching Assistant, Facts Matter: Effective Advocacy for Public Health Policy
January 2017
Course Instructor: Shelley A. Hearne, DrPH

- Assisted instructor with course coordination, communication with students, and development of grading rubrics

TEACHING EXPERIENCE (CONTINUED)

Teaching Assistant, The Role of Community-Based Organizations and Non-Governmental Organizations in Improving Global Public Health
January 2017
Course Instructor: Paul Gaist, PhD, MPH

- Assisted instructor with course coordination, communication with students and guest lecturers

Teaching Assistant, Improving Public Health through Innovative Social and Behavioral Tools and Approaches
June 2017; June 2016
Course Instructor: Paul Gaist, PhD, MPH

- Assisted Professor with course coordination, communication with students and guest lecturers

ACADEMIC SERVICE

Johns Hopkins Bloomberg School of Public Health
2018 Student Representative, Academic Prospectus Working Group
2018 Student Ambassador, American Public Health Association, Student Recruiter
2016-2019 Student Representative, Diversity Committee,
Department of Health Policy and Management

- 1 of 2 students on committee
- Devised strategic plan for recruitment and retention of diverse students

2016-2017 Co-Chair, Student Coordinating Committee,
Department of Health Policy and Management
2016-2017 Vice President, Black Graduate Student Association

- Organized the Inaugural JHSPH Black Faculty/Student Networking Event.

2016-2017 Leadership Committee Member, Students for a Positive Academic Partnership with the Baltimore Community (SPARC)

Drexel University
2013-2014 President, Drexel Black Graduate Student Union (DBGSU)

- First female president in DBGSU history

2014 Student Ambassador, Dornsife School of Public Health, Accepted Students Webinar
2014 Student Panelist, Dornsife School of Public Health, Information Session for MPH Students
2013 Student Ambassador, American Public Health Association, Student Recruiter
2012-2013 Secretary, Drexel Black Graduate Student Union